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COMPUTERWORLD

Inside

SHOW TIME
The big focus at Comdex/Spring '93 this week will be platforms. The introduction of Windows NT will prove it is finally ready for prime time — maybe. IBM, meanwhile, gets the jump on NT by unveiling OS/2 2.1. And look for third parties to line up behind both operating systems and OLE 2.0. *Pages 28, 29*

NETWORKED MACINTOSHES
The Mac Finder is unable to address server data volumes larger than 2G bytes. Novell offers a workaround in NetWare 4.0, but users hope Apple will address the storage problem directly. *Page 1*

SQL DATABASES
Lotus is evaluating several strategies for better integrating its applications with data stored on back-end SQL database servers. *Page 7*

IN DEPTH
1994 is the year wireless technology will take off: Prices for sending E-mail and faxes are expected to fall in the 10-cent to 50-cent range, respectively. *Page 137*

NT critical to Microsoft's client/server battle plan

By Christopher Lindquist
REDMOND WASH.

■ Microsoft Corp. is turning up the volume on its plan for helping businesses re-engineer using client/server computing, according to analysts, consultants and information systems managers briefed by the company.

During the past several months, Microsoft has announced a variety of programs, products and services aimed at priming the client/server pump. The programs are expected to lead to a point this year when Microsoft will have the tools in place to begin pushing firms to re-engineer based on a client/server architecture made up of Microsoft products in conjunction with "open" standards.

Central to the strategy are Windows NT and the Windows NT Advanced Server, which will debut this week (see story page 29).

Surrounding Windows NT will be a variety of other recently unveiled technologies, including Object Linking and Embedding Version 2.0 and ObjectBasic, a macro language that

Microsoft, *page 28*

Special section

Windows of opportunity


Sandra Valdez

For Rich Davisson, systems manager at Con Edison, implementing a Windows application meant outflanking his own mainframe-centric IS shop. For other developers, the sticking points are reluctant users and managers. *Computerworld* offers advice on how to sell homegrown Windows projects as well as avoid costly purchasing pitfalls. Stories begin on page 85.

IBM to cut host software prices

Big Blue hopes to extend mainframe use

By Johanna Ambrosio and Thomas Hoffman
CHANTILLY, VA.

IBM's mainframe customers won a major victory last week when the company announced it will for the first time offer widespread choice-in-pricing options for many different host software packages.

The goal is to cut the cost of host computing, thereby extending the mainframe's longevity.

Revealed at a meeting of 200 chief information officers from IBM's largest accounts, the new pricing plans include payments based on the number of end users attached to the mainframe or on how much of the host is actually used to run the software.

At the same time, IBM said it will hold the line on mainframe software price increases until at least 1995 and will waive its usual annual increases this year and next.

Furthermore, the company said, customers who choose traditional tiered pricing will not have to pay more than processor Group 80 charges, even if they use IBM's largest capacity machines.

IBM is also offering flexible payment terms and conditions for large customers. IBM's Enterprise Agreement includes items such as a license to run software across an entire organization vs. on just a particular box, and it offers the ability to upgrade from an old to a new version of software without additional cost.

Independent software vendors had different responses to IBM's

IBM, *page 14*

Sharpening the knife

IBM's new per-user charges for some mainframe software can really add up the savings. Some examples of monthly licensing charges:

			New Prices, 200 Users*
OfficeVision/MVS OfficeVision/VM	$2,490	$3,295	$1,300 ($5/user plus $300)
Search Manager/370	$4,180	$4,410	$2,700 ($10/user plus $700)

*Regardless of processor

Source: IBM
CW Chart: Nancy Kowal

Ethernet options broaden

Vendors to offer 'two-way' transmission

By Joanie M. Wexler

If choice is good, and you can't get too much of a good thing, then the Ethernet community should welcome another option for pumping more life into its local-area networks.

LAN switch vendor Kalpana, Inc. is due to announce this week an embryonic "two-way" Ethernet switching technology for its internetworking devices. The move will kick off a series of announcements from other vendors, including IBM and smart hub vendor Cabletron Systems, Inc.

Called "full-duplex Ethernet," the two-way scheme will allow users to send and receive signals at the same time over 10Base-T (unshielded twisted-pair) or 10Base-F (fiber) Ethernets. These LANs already use one cable for transmitting and another for receiving, although the functions occur one at a time.

In the new implementation, senders and receivers alike get a dedicated 10M bit/sec. of Ethernet

Ethernet, *page 8*

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Distributed databases

Chase unifies view

By Jean S. Bozman
NEW YORK

Chase Manhattan Bank NA is quietly building a client/server layer on top of an extensive global PC network, and it plans to deploy the first wave of related applications — including one distributed database program — on a worldwide basis by year's end.

The $96 billion bank intends to use relational databases and intelligent workstations to give dispersed business units better access to customer data stored in central database repositories, Chief Information Officer Craig Goldman said.

The goal is to import data from mainframes onto local-area networks to present a unified view of large corporate accounts across the bank's far-flung operations. "We have multiple business units, each of which has its own customer file," explained Gene Friedman,


Steve Hall

Chase Manhattan's *Craig Goldman is extending client/server reach*

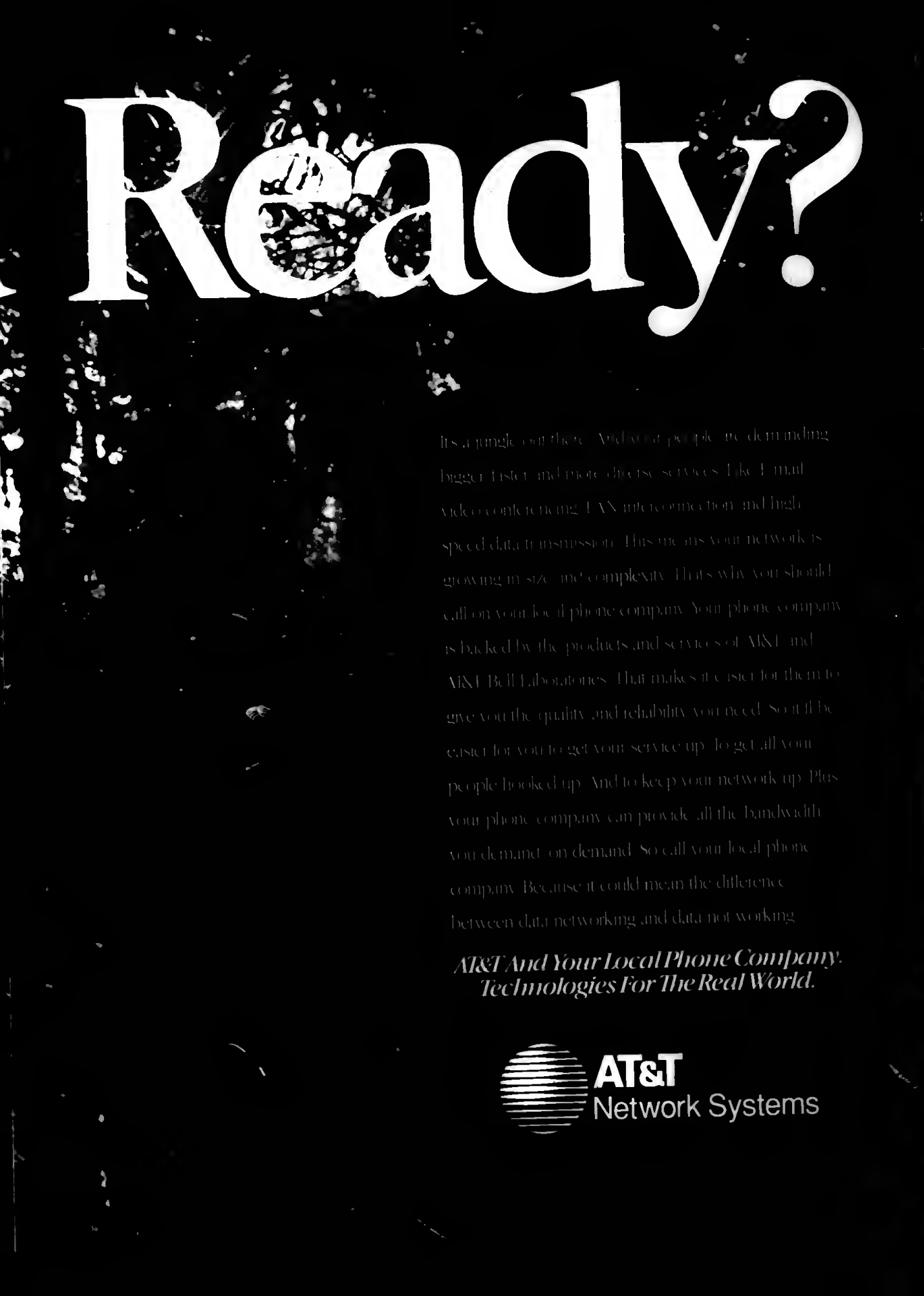
Chase, *page 16*

Recent events suggest the administrative burdens of your network could grow substantially.



Are You





Ready?

It's a jungle out there. And your people are demanding bigger, faster and more diverse services. Like E-mail, video conferencing, LAN interconnection and high-speed data transmission. This means your network is growing in size and complexity. That's why you should call on your local phone company. Your phone company is backed by the products and services of AT&T and AT&T Bell Laboratories. That makes it easier for them to give you the quality and reliability you need. So it'll be easier for you to get your service up. To get all your people hooked up. And to keep your network up. Plus your phone company can provide all the bandwidth you demand, on demand. So call your local phone company. Because it could mean the difference between data networking and data not working.

AT&T And Your Local Phone Company. Technologies For The Real World.

AT&T
Network Systems



Face-to-face with Bill Gates. Page 123

Alan Levenson

CLIENT/SERVER

Microsoft seeks to encompass client/server with an architectural framework built around **Windows NT**. In another bid to solicit IS support, the company is beefing up support options for NT. *Cover 1 and page 28.* **Chase Manhattan Bank** has anointed **Sybase** databases as its global standard for client/server computing. Chase executives said the new client/server systems would extract key data from transaction-processing systems for use in geographically dispersed business units. *Cover 1*

ENTERPRISE NETWORKING

IBM takes over the DME integration effort, setting an optimistic new release schedule. *Page 2.* Big Blue also said it will make its 3174 SNA cluster controllers more LAN-supportive. *Page 8.* On the **Ethernet** front, users can expect yet another twist on that venerable technology — "two-way" networks that allow simultaneous sending and receiving. *Cover 1.* Meanwhile, **ATM LAN** pioneer **Fore Systems** forges ahead with more price cuts and faster adapters *(Page 8)*, while **US West** and **Time Warner** make history with the boldest telephone/cable TV company coupling to date. *Page 12*

MAINFRAMES

IBM has decided to offer per-user options for mainframe packs, promising usage-based pricing in 1994. Some customers have already raised red flags about possible problems, but competitors are expected to follow IBM's lead. *Cover 1 and page 14*

RESERVATION SYSTEMS

In a bid to keep their reservation system on-line, **Hilton Hotels** and **Budget Rent A Car** have opened talks with little-known service provider Litton Computer Services. Charges continue to fly between the two and their former outsourcer, AMR. *Page 4*

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BEST COMPUTER NEWSPAPER 1992 COMPUTER PRESS ASSOCIATION

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Networked Macs hit wall

By Michele Dostert
TUCSON, ARIZ

Doug Crowder, a systems manager at Hughes Missile Systems here, had Apple Computer, Inc. Macintosh users howling in his ear recently, demanding to know why they suddenly could not access their Novell, Inc. NetWare v3.11 servers.

Frantic research revealed an unsuspected wall in the Macintosh's data access capabilities — one that could impede or reverse Apple's push to put Macintoshes on corporate desktops.

Crowder had recently reconfigured his NetWare servers, expanding the server volume to more than 3G bytes in the process. "The problem is, the Mac Finder [Apple's file manager] in System 7 can't address data volumes larger than around 2G bytes, so the Macs couldn't see the data," Crowder said last week.

He said he was especially irritated because the only way out of the problem was to spend a recent Sunday repartitioning his NetWare servers once again.

Problems evident

The Mac Finder data access limit was discussed in detail by attendees at the Apple developers' conference in San Jose, Calif., early this month. Indications of Macintosh data access problems come amid reports that large companies such as the Boeing Commercial Airplanes Group, General Motors Corp. and the U.S. Department of Energy's nuclear weapon facility in Savannah River, Ga., are considering suspending Macintosh purchases.

Crowder said that while the data access limitation would not force him to throw away his current Macintoshes, he would hesitate to add new ones to his network.

Crowder said Apple's response to the problem was to suggest that 2G-byte server volumes were too large for efficient data retrieval anyway. "That's just not true anymore, thanks to fast SCSI disk drives and redundant arrays of inexpensive disks technology," he said. "I have one server volume holding 8G bytes of data, and it works fine."

An Apple spokeswoman said the company is working on a fix. "Apple is aware that some of its customers need to address these large data volumes, and we're working very hard to make this happen," she said.

"We're running our Macs against DEC VAXs, and so far the largest partition we've used is 1.5G bytes, so it hasn't affected us yet," noted Bob Anderson, a senior analyst at A. O. Anderson Automotive Products in Milwaukee. "But we certainly expect to have data volumes 2G bytes and larger in the future, especially if we move to PC servers. So I hope Apple fixes this problem before we get there."

Novell is aware of the Macintosh data access problem. "We started hearing reports about it from our larger or more technical customers, with larger or more technical environments demanding large server volumes," said Susan Hanson, marketing manager for Novell's Macintosh product line. "We are talking with Apple, hoping they'll up the 2-gig limit in future system releases," Hanson added.

Meanwhile, Novell has devised a workaround for the Macintosh data access limit. It will be available in the NetWare 4.0 Macintosh NetWare Loadable Module when it ships next month.

The new fix, however, is not scheduled for release on the NetWare v3.11 platform anytime soon. Until it is, network administrators running Macintoshes against large NetWare v3.11 servers will have to artificially limit the size of their server partitions and continue petitioning Apple to raise the 2G-byte bar.

Late Breaking News Briefs

IBM cuts PS/2 server prices

IBM PC Co. cut prices on five of its Personal System/2 servers last week. The 33-MHz 486SX-based PS/2 Model 85s now cost between $3,800 and $4,765 — or $25 to $240 less than before — while the 50-MHz 486DX-based PS/2 Model 95s now cost between $11,300 and $12,365 — $695 less than before. IBM cited a need to respond to competition in the server market.

StorageTek to acquire Amperif

Storage Technology Corp. last week said it has agreed to acquire Amperif Corp. in Chatsworth, Calif., maker of the Viking disk array. Viking would complement Storage Tek's Iceberg redundant arrays of inexpensive disks system. Storage Tek also said that in-house testing of Iceberg has been pushed back to July — about a year after the system was originally scheduled to ship. It is now expected to ship in the fourth quarter.

IBM opens BIOS

IBM will today give new meaning to the term "IBM-compatible" when it announces that it will license its BIOS to other companies. IBM has tapped Phoenix Technologies Ltd. to market its BIOS and eventually merge the code into Phoenix's BIOS.

UK megadeal finalists

Inland Revenue Service, the UK's equivalent of the Internal Revenue Service, late last week selected a Computer Sciences Corp./IBM team and Electronic Data Systems Corp.'s EDS-Scicon Ltd. as finalists for a 10-year outsourcing project valued at around $2 billion. The project involves data center operations and application development at a total of 16 sites, and the transfer of 2,100 information systems employees.

Correction

Due to a production error, the last sentence of the story on page 1 in the May 17 issue was cut off. It should have read: However, he said he expects local regulations will not hamper the cable networking.

Unix performance test published

By Jean S. Bozman
PARSIPPANY, N.J.

Unix International said last week it has published a one-size-fits-all standard for measuring system performance in mixed-vendor enterprise networks.

The Universal Measurement Architecture (UMA) proposal is a set of specified interfaces that will allow users to "harvest" performance data from operating systems, including non-Unix systems and databases. The data would be used in real-time performance monitors, application-tuning tools and data center consoles.

Shane McCarron, project manager for technology and product planning at Unix international, a consortium of open systems vendors, said UMA is the result of two years of work by 150 people from member firms.

"We've created a set of enablers that would allow the development of portable performance management applications," McCarron said. "If you've got this architecture in place, you could write an application that runs on one machine on a network hut that monitors tbe performance of all the machines on that network."

Crucial support

To make any impact, according to McCarron, UMA will need broad support. Industry analysts agreed.

"It's going to have to be adopted by everybody to be effective," said Rikki Kirzner, a principal analyst at Dataquest, Inc. in San Jose, Calif. "What we've seen in the past is a hunch of vendors sitting on standards bodies just to make sure the standard doesn't go against them." This time, sbe said, "we don't know if they're going to implement the specs."

But there is a need for an open systems specification that gathers performance information from operating systems and database managers in a consistent way.

"If that's what it is, I applaud it," said John Morrell, research manager for Unix software at International Data Corp. in Framingham, Mass. "That's because there's no universal way of interfacing to the [different] system components to get these statistics." Otherwise, users will have to buy multiple monitors to get a single view of their operations.

Amdahl Corp., which supports both IBM's MVS operating system and its own UTS Unix nperating system on mainframes, said it intends to release UMA-compliant products later this year.

"The intent of UMA is to capture data on a running system," explained Tom Littauer, a program manager in Amdahl's open systems group. "You can write it out to disk or call some vendor's utility, and UMA lets you do both."

Among the nther vendors participating in the UMA project are AT&T, Digital Equipment Corp., Hewlett-Packard Co., IBM, Informix Software, Inc., Oracle Corp., the Open Software Foundation, Unix System Laboratories, Inc. and Tandem Computers, Inc.

Vendors will use the specification by writing interfaces to the UMA standard, allowing open systems monitors to gather data from their products' operating systems.

IBM becomes DME integrator

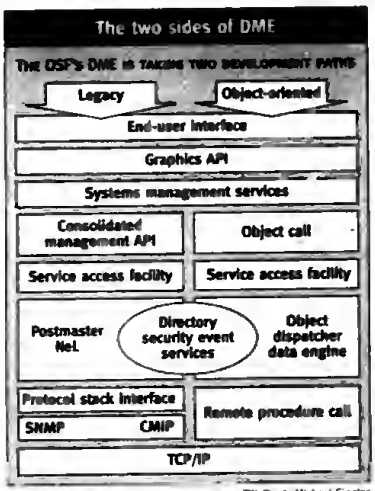
Release date for object-oriented manager delayed until Q2 '94

By Elisabeth Horwitt

Having takeo control of the Distributed Management Environment (DME) development effort from The Open Software Foundation (OSF), IBM is eyeing second-quarter 1994 as the likely release date for the object-oriented, Corba-compliant version of the system.

Compliance with the Object Management Group's Common Object Request Broker Architecture (Corba) standard would provide a "much richer management environment" because it would extend the range of services and applications that could communicate under the DME umbrella, said Judith Hurwitz, presideot of Hurwitz Consulting Group in Newton, Mass.

The object-oriented DME will provide a common framework for interconnecting different vendors' systems manageoeot platforms and applications.



Source: IBM
CW Chart: Michael Siggins

Delays inevitable

However, the time frame, like preceding timetables put ont by the OSF, may be a wee hit optimistic, Hurwitz said. "Add a year or two or more to what IBM says, this stuff is really complicated."

On the other hand, few users have expressed a burning desire to get their hands on object-oriented DME. More important are common application programming interfaces (API) that allow independent software vendors to port their management applications across all the major management platforms, users said.

The OSF has already addressed this need with a noobject-oriented version of DME, with a common API for managing both Simple Network Management Protocol- and Common Management Information Protocol-based systems.

However, the object-oriented version of the distributed systems management standard has been widely reported as seriously behind schedule.

The primary problem, according to the OSF and analyst sources, lies in integrating different pieces of the architecture, supplied by different vendors, into the object-oriented framework. This is the job now on IBM's plate.

The new release schedule is "not cast in concrete," IBM systems manager Tom Dow conceded.

Team effort

DME contributors IBM, Hewlett-Packard Co. and Tivoli Systems, Inc. have been working with the OSF for some months to replace Tivoli's object request broker with one developed by IBM and HP that is Corba-compliant.

An object-oriented platform allows different services — "anything from electronic mail to a database holding management facts to a trouble-ticketing system" — to share data and cooperate on systems management tasks, Hurwitz said.

The object request broker treats each service, or managed system, as an object and takes care of delivering queries and responses. It also provides a common platform for application developers to write to because it eliminates the need tn "write to s different APT" to interconnect an application to each different service, Hurwitz said.

IBM took over the integration of the various pieces of the DME platform with the blessing of the OSF, as well as DME partners HP and Tivoli, Dow said.

PC enhancements

Fifth Generation widens utilities

By James Daly
BATON ROUGE, LA.

Fifth Generation Systems, inc. weot on the offensive in the increasingly combative ntilities market last week with the introduction of oine new utility and security applications, including its first OS/2 offering and the expansion nf its entry-level Express line.

The lineup represents Fifth Generation's return salvo against Microsoft Corp., which started hearts racing among third-party vendors when it introduced a utilities-packed MS-DOS 6.0 in March. President Barry L. Bellue said news of DOS 6.0's additional ntilities caused a 35% drop in sales of utility applications among all manufacturers in a recent qnarter.

But Bellue added that Microsoft may face trouble.

"Microsoft just doesn't know what it is getting into," he said. "All ntility products require an extensive amount of support, and as a result, I predict that DOS 6.0 will become one of the most unsuccessful products Microsoft will ever release." Since its release, DOS 6.0 has had mixed reviews.

Bare-bones DOS

Several users also noted that the rudimentary utility offerings of DOS 6.0 will not replace the more meaty products of third-party vendors.

"DOS 6.0 will give us a qnick and easy way to get better backup, data compression and virus protection to the average Joe, but there's no way it's going to satisfy our power users," said Rich Pickett, who has installed more than 300 copies of DOS 6.0 as director of computing services at the Oregon Institute of Technology in Klamath Falls, Ore. "We're still going to be looking toward third-party vendors."

Fifth Generation's additions include the following:

- Fastback Plus 6.0, the latest version of its best-selling DOS backup and restore program. The $149 package provides a simplified interface as well as added virus protection, tape support and network functionality.
- Fastback Plus for OS/2, which offers features similar to the DOS version, including scheduling capabilities, quarter-inch cartridge tape support and error correction. It will sell for $199.
- MacPak, a $149 collection of utilities for the Apple Computer, Inc. Macintosh that includes access security as well as backup and file management.
- Fastback Express for the Macintosh Version 2.0, an upgrade to the firm's entry-level backup program. Its retail price will be $99.

All new products are expected to ship by next month, said Vice President nf Marketing Dick Miller.

Bellue added that Fifth Generation's next frontier will be to replace standalone utilities packages with network-based utility applications.



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Microsoft talks groupware options

Looks to eradicate groupware applications

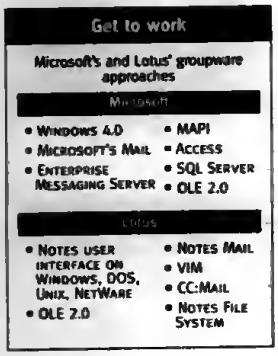
By Michael Vizard
REDMOND, WASH.

Despite Microsoft Corp.'s recent pledge to better integrate its applications with Lotus Development Corp.'s Notes offering, the company's ultimate objective is to eliminate the need for separate groupware applications.

Microsoft is pursuing a strategy in which all applications will be inherently group-enabled through its Object Linking and Embedding (OLE) protocol and services in its operating systems, databases and mail services.

To accomplish this goal, Microsoft intends to revamp its Windows and Windows NT operating systems to make it easier to find documents and files, said Lewis Levin, Microsoft general manager for the Excel business unit.

In addition, Microsoft executives said they intend to enhance their databases to handle objects and unstructured text and bolster support for replication services in their file systems, databases and mail services. They will also concentrate on linking their applications via Version 2.0 of OLE, according to Shane Kim, Microsoft product manager for workgroup applications.



Microsoft will also likely use the technology from its still-under-development Cairo object-oriented operating system to create an object-oriented database that will handle different data types more efficiently than Notes or SQL databases, said Gary Voth, Microsoft senior product manager for corporate and network systems.

Taken together, these enhancements will give Microsoft's product line groupware capabilities that are very similar to the features in Lotus' Notes (see chart).

"Products like Notes are a special class of software designed to make it easier to find documents. We don't think you should require people to buy a separate piece of software to accomplish this," Levin said.

Notable Notes

However, information systems directors said Microsoft is sorely underestimating the impact Notes has already made.

"Notes is more than just groupware; it's an application development environment," said Michael Mendelbaum, a vice president at Chase Manhattan Bank NA.

Notes has moved way beyond documents, said Alex Morrow, general manager for cross-platform architecture at Lotus. "It provides a way to store objects that have relationships to each other," he noted.

And Dave Marshak, an industry analyst at the Patricia Seybold Group, noted that it will probably be 1997 before Microsoft will see independent software vendors providing groupware applications on top of its model.

"I don't think people are going to wait that long for Microsoft," Marshak said.

Despite the half-million Notes licenses that Lotus has delivered to more than 2,000 companies, Microsoft executives maintain that Notes will be a relatively short-lived phenomenon.

"Notes is a clever front end, but it has a weak data store model," Voth claimed.

Still, Notes' success has forced Microsoft to promise to better integrate its applications with Notes (CW, May 10).

"Microsoft is a pragmatic company. But in terms of our overall groupware strategy, our support for Notes will be a footnote," Levin said.

"When you don't have anything to sell, it's easy to sell promises. What's driving Notes is that people need a cross-platform architecture," Lotus Chief Technology Officer John Landry countered.



In the group

In the first quarter of Lotus' current fiscal year, Notes and CC:Mail accounted for 15% of Lotus' $227 million in revenue. And these products currently account for 50% of Lotus' research and development budget, according to Jim Manzi, Lotus CEO.

AMR calls Confirm partners selfish

By Mark Halper
DALLAS

Rancor continued to run deep through the erstwhile Confirm partnership, as AMR Corp. expanded on earlier allegations that Hilton Hotels Corp., Marriott Corp. and Budget Rent A Car Corp. undermined the computerized reservation project by acting in their own self-interest.

In a May 14 amendment to its complaint filed in state court here last September, AMR claimed the three user partners deviated from an agreed-on plan to define specifications for a common reservation system and instead pressed AMR "to build three separate reservation systems under the Confirm rubric."

AMR alleged that because the three partners had failed to negotiate a contract limiting AMR's profit from building the system to 20%, they embarked on separate self-serving strategies designed to exploit the fixed-priced contract for more than their share of the contract's worth.

The filing does not quantify the fixed-price fee, although AMR said the three user partners agreed to pay $90 million. AMR declined to elaborate. Hilton said it had no comment on the suit, and Budget and Marriott did not return phone calls by press time.

AMR was the development partner in the Confirm consortium, which fell apart last summer. AMR subsequently sued the user partners, each of which has separately countersued AMR to settle financial compensation and rights to software code.

As in its original complaint, AMR's May 14 filing singles out Marriott for secretly formulating a plan to blame AMR and withdraw from the project in favor of enhancing Marriott's own Marsha reservation system.

AMR's amended complaint cited an internal Marriott investigation in February 1991 in which Marriott allegedly concluded: "We can apply what we've learned [from Confirm] to Marsha for an investment comparable to Marriott's share of the remaining balances on the Confirm projects and deliver at least the same functions."

The filing portrays a discordant group of partners and notes that "in 1990, Marriott described the attitude of Budget's supervisor as 'negative, accusatory and self-serving.'"

To back up earlier assertions that the partners insisted on incorporating functionality with little value and developing redundant programs, AMR stated that although the "vanilla" Confirm system had a feature for tracking frequent travelers, Hilton and Budget insisted that AMR develop another technique for the same purpose.

Likewise, Marriott requested development of a special rates program for its Residence Inns and Fairfield Inns properties only, AMR stated.

"In demanding functionality of limited value, the user partners each sought to custom-design the system to their specific needs," AMR stated.

The filing reasserted earlier allegations that the user partners "bombarded [AMR] with an unending flurry of change requests," failed to provide information on a timely basis or did not provide it at all, made poor staffing assignments by seeking compensation and rights to code and failed to make payments.

Hilton, Budget pick Litton to run reservation system

Faced with a worst-case scenario system shutdown, Hilton and Budget Rent A Car have selected a dark-horse candidate that they hope will take over operation of their aging North reservation system.

The hotel and rental car company said last week that they have entered into contract negotiations with Litton Computer Services with the intent of replacing AMR Corp. as their reservation systems outsourcer by July.

AMR notified Hilton and Budget last fall that it would withdraw as their reservation system provider effective this month.

That notification came as a rift widened between the truculent parties over AMR's alleged failure to develop a next-generation reservation system called Confirm (see story at left).

It also set off a frantic search by the two companies for a replacement reservations provider (CW, April 5). And with time running out — AMR has agreed to extend its services until July 9 — Hilton and Budget are still sweating out signing with a replacement provider.

On a short list were IBM's Integrated Systems Solutions Corp. outsourcing subsidiary and AMR. The two travel firms had considered AMR for the short term to spare themselves the travails of changing horses while they scouted longer term, next-generation alliances.

Hilton spokespeople have repeatedly referred to the "sensitivity" of discussions when declining to comment. Budget did not return phone calls last week.

San Jose, Calif.-based Litton, a subsidiary of Litton Industries, Inc., said the prospective contract would probably run for seven years at a value of about $100 million. The agreement would call for Litton to take over management of Compass Computer Services, Inc., based in Carrollton, Texas, and jointly owned by Hilton and Budget, to run the North reservation system.

Litton declined to elaborate on what details remain to be fleshed out in the Hilton/Budget arrangement.

— Mark Halper

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News Shorts

Sales, profits boom for CA

Pretax income for **Computer Associates International, Inc.**'s fiscal year ended March 31 rose an impressive 44% to $383.7 million, compared with $267.1 million in 1992. Revenue jumped 22% to $1.8 billion. For the quarter ended March 31, revenue was $540.1 million, a 15% increase over the year-earlier quarter. Quarterly pretax income grew 64% to $155.31 million. Sanjay Kumar, CA's executive vice president of operations, said CA's international sales kept pace. Sales of systems management products and application development tools also flourished, Kumar said.

Rollwagen backs off Commerce job

Former **Cray Research, Inc.** Chief Executive Officer John Rollwagen withdrew his name from nomination to the second highest post at the U.S. Department of Commerce. Rollwagen, who has been questioned by the U.S. Securities and Exchange Commission in connection with trading in the stock of Cray Research spin-off **Cray Computer Corp.**, said the resulting delay in his confirmation had given him time for personal reflection, during which he concluded he could serve his country better as a private citizen. Rollwagen has not been cited for any wrongdoing.

Adstar expands storage line

IBM's Adstar storage subsidiary, as expected, introduced a new model of its 3390 disk drive that triples the current capacity. Also announced was a new model for the 3990 controller, Model 6, which is not field-upgradable from the current Model 3; new low-end models of optical servers; and a version of the 3495 tape library that does not require Systems Managed Storage software. Adstar also introduced a money-back guarantee on all new products, as well as on existing members of the 3390 and 3990 families, among others. The products, new or old, must be installed after June 1.

Hot boxes recovered

The **Federal Bureau of Investigation** has seized more than $10 million worth of computer equipment that it claims was stolen from several Silicon Valley firms, including **Tandem Computers, Inc.**, **IBM** and **Unisys Corp.** An FBI spokesman said agents seized thousands of computers, memory boards, documents and computer parts that were headed for sale at cut-rate prices. No arrests have been made, U.S. Attorney John Mendez said.

SHORT TAKES Add **MCI Communications Corp.** to the growing list of large customers that have signed flat-fee, enterprisewide licensing agreements with **CA**. . . . As it heads to market with a new line of NT machines, **Sequent Computer Systems, Inc.** has replaced Senior Vice President of Marketing Dennis Peck and named Mark Miller as its new marketing vice president. . . . The networking vendor team of **AT&T**, **Cisco Systems, Inc.** and **StrataCom, Inc.** announced shipment of the documentation specifying their common technology for Asynchronous Transfer Mode-to-frame-relay networking, announced in January. . . . In an effort to compete more effectively in world markets, the **New York Mercantile Exchange** and the **Chicago Mercantile Exchange** announced a three-year plan to share information in their attempts to develop separate integrated systems environments. . . . **Hitachi Data Systems Corp.** plans to unveil a souped-up direct-access storage device with disk-mirroring capabilities this week. . . . **NCR Corp.** introduced work-flow process management software designed to run on **Microsoft Corp.** Windows-based client PCs that are hosted by NCR servers.

News shorts, *page 18*

Health care data network fires up

On-line service allows information to be shared in real time

By Nell Margolis
SEATTLE

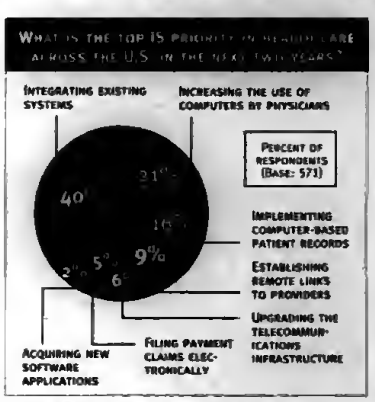
An on-line service that will allow health care organizations to exchange data in real time went live in three geographic pilot areas earlier this month.

A fourth area will be added within days, according to James Pickering, managed care vice president at National Electronic Information Corp.

The beta test of the Healthcare Information Network (HCIN) is bound to be scrutinized by eager eyes throughout the medical and technological professions, several health care information systems leaders said last week.

"We're not on the HCIN yet, but we're seriously thinking about it," said Ron Barrow, assistant vice president of electronic data interchange (EDI) services at the Baton Rouge, La., headquarters of Blue Cross/Blue Shield of Louisiana and Mississippi. "Everyone is. This is the way we're all eventually going to go."

Launched last July by PCS, Inc., a National Electronic and McKesson Corp. information technology subsidiary, HCIN weds National Electronic's 330-vendor, 100,000-plus-subscriber automated claims network to PCS' prescription drug management software. It offers real-time routing of a broad slate of managed health care transactions nationwide. AT&T delivers leased lines and 800 numbers.



Source: Healthcare Information and Management Systems Society/ Hewlett Packard Co. study

Old habits never die

But Barrow noted that ready access will go only so far in luring health care administrators, especially doctors, away from habits ingrained over decades.

"No matter how easy the technology gets, technology is part of business, and a lot of doctors are still very resistant to getting involved in the business end of medicine," Barrow noted. "The same doctor who will spend $50,000 on a Mercedes won't spend $4,000 on systems because the car is a symbol of being a doctor and the computer is a symbol of being a businessman."

At the moment, HCIN's first fruits — instantaneous electronic exchange of eligibility information for benefits coverage — are being sampled at sites in Texas, Southern California and Virginia, with two Ohio sites preparing to go live this week, Pickering said.

User enthusiasm for HCIN, Barrow said, goes beyond the considerable benefits of automated payment information. "We're looking ahead to automated patient records."

The automated patient record is a complete, heavily cross-referenced on-line document containing every known fact and transaction that affects any patient's past, present or future care. While it is not yet a reality, industry observers said they believe that it will be within the next several years.

"In an automated environment, care can happen a lot faster and a lot better," Barrow said. And those who become network-ready early on, he added, will be best positioned to take advantage of the full-scale automated record technology as soon as it arrives. "That's why we're so interested in HCIN," he said. "These are all building blocks."

"Networks and automated patient records are the future for everyone in health care," said Barbara Mings, manager of user support at Austin, Texas-based Austin Diagnostic Clinic.

National Electronic is poised to expand HCIN into 10 more strategic market areas later this summer, Pickering said. "Their feedback is especially critical in this particular instance because HCIN is the first of its kind. We're trying to build a mousetrap to the homeowner's specifications."

Pickering declined to identify the target markets. However, he hinted, "a demographer would have no trouble figuring them out." Major urban areas with large health care establishments — Boston, Chicago and New York, for instance — are likely candidates for HCIN's second round.

Health care payers, providers and vendors in the test markets can currently reach HCIN 16 hours a day, five days a week, plus eight hours on Saturday. Round-the-clock availability and service are slated for summer, Pickering said. As a further enticement, National Electronic is offering a homegrown, Microsoft Corp. Windows-based front end that lets users build their own tables and files, using English-language descriptors, he added.

Court halts sale of SPARC clones

By Cara A. Cunningham
BOSTON

A California superior court last week enjoined a Hyundai Electronics of America subsidiary from selling Scalable Processor Architecture (SPARC)-based clones that Sun Microsystems, Inc. alleges contain unlicensed components.

In a preliminary injunction, a superior court judge in Santa Clara, Calif., ruled that Axil Workstations, Inc., a San Jose, Calif.-based division of Hyundai, can no longer sell its Model 230 and Model 310 workstations, which are clones of Sun's SPARCstation 10 reduced instruction set computing workstation. These clones include boards designed by Sun but not yet released by the company, according to Chuck Mulloy, a Sun spokesman in Mountain View, Calif.

Sun filed a civil suit in March alleging that Axil obtained the layout and manufacturing blueprints of the board, code-named Ambush, by hiring a Sun engineer. Sun is seeking a permanent injunction and monetary damages for misappropriated trade secrets and theft.

"The rationale behind the suit is that we were concerned, and continue to be concerned, about [maintaining] a level playing field in the SPARC market," Mulloy said. Because Axil included this board in its workstation before other SPARC clone makers were granted access, Sun said Axil had an unfair advantage over its competitors, he explained.

Sun has not yet decided whether it will bring the board used by Axil to market or not, Mulloy added.

Cunningham is the IDG News Service's Boston correspondent.

Office automation

Lotus seeks suite spot in app market

By Michael Vizard
CAMBRIDGE, MASS.

Looking to deflect competitive pressure incurred by the arrival of software suites from Microsoft Corp. and Borland International, Inc., Lotus Development Corp. is working to better integrate the applications that make up its SmartSuite offering. It is also casting about for a way for users to access data from back-end databases from within its applications.

Lotus has begun briefing customers on SmartSuite Version 2.0, which will allow users to more easily integrate files across applications. In addition, Lotus has long-term plans to integrate the version manager technology in 1-2-3 for Windows across the entire suite.

"You'll be able to send a message out of Ami Pro without having to go out and open another application," said Krystyna Filistowicz, an analyst at Dataquest, Inc. SmartSuite 2.0 is due this summer.

SQL integration

Meanwhile, Lotus' database effort is currently focused on integrating its Notes environment with SQL databases using technology from a project called Notebook, which will allow applications to call data from both SQL and Notes databases [CW, April 26].

"Clearly, we're evaluating a strategy for accessing back-end data," a company spokesman said.

However, because Notes is currently installed at only about 2,000 companies, Lotus has been evaluating potential acquisitions of database companies that would provide technology that could be deployed alongside the larger installed base of Lotus applications.

Lotus declined to comment on "speculation" regarding acquisition plans, but Lotus Senior Vice President Robert Weiler has previously noted that Lotus would rather acquire a database vendor than build its own database product.

Weiler attributed this decision to the assumption that the need for PC databases will eventually be subsumed by distributed databases. This means that Lotus would rather have an installed base of customers than have to develop a product and then build a following.

In the past, Lotus executives have strongly dismissed the need to purchase or build their own database, at one point folding an internal development project. An investment in Sybase, Inc. yielded a $33 million windfall but no products. The company had previously maintained that providing data linking and access tools, such as DataLens, was sufficient.

Last week, however, industry analysts said Lotus is one of several firms evaluating a potential acquisition of Approach Software, Inc. in Redwood City, Calif., which markets a Windows database that includes hooks to both SQL and PC databases. Approach officials declined to comment.

Sales of Microsoft's Access and Borland's Paradox for Windows databases have been brisk at information systems shops that are deploying these databases as front-end query tools for accessing data on distributed databases.

"Microsoft raised the bar by adding Access. Companies are going to have to add databases to their suites because they provide enabling technology for integrating the suite. Vendors also have to encourage the use of databases by end users," Filistowicz said.

Lotus Chief Executive Officer Jim Manzi has shown a bent toward acquisitions during the past several years. For example, the company acquired Samna Corp. for its Ami Pro word processor, which is now part of Lotus' office software suite, as well as its CC:Mail electronic-mail package. In addition, Lotus licenses Notes from Iris Associates in Westford, Mass.

"Manzi is hungry for growth, and in the past, that has meant an acquisition for Lotus," noted Norman Weizer, president of Weizer Associates, Inc.



IBM makes 3174 LAN-ready

Big Blue hopes to hold on to users who prefer multivendor networks

By Elisabeth Horwitt
WHITE PLAINS, N.Y.

■ IBM has made its 3174 SNA cluster controller into a multiprotocol local-area network server in hopes of dissuading users from putting the aging workhorse out to pasture as they move from SNA to multivendor LAN environments.

The new Networking Server models of the 3174 family will for the first time support direct attachments to Ethernet, as well as be able to translate 3270 and ASCII terminals' Systems Network Architecture (SNA) data streams into Transmission Control Protocol/Internet Protocol (TCP/IP) remote networking protocols such as Telnet and TN3270.

The 3174 can thus provide a TCP/IP-based host connection to users' 3270 installations, either remotely via a router backbone or locally via an Ethernet LAN, according to an IBM spokesman. The lack of Ethernet support has caused a number of users to turn to vendors such as McData Corp. that support both Token Ring and Ethernet connections for SNA devices.

Indeed, IBM's announcement could pump some much-needed new blood into the 3174, which is widely installed but losing ground fast to SNA-compatible controllers from Memorex-Telex, Idea Associates, Inc., Apertus Technologies, Inc. and McData, said Nancy Meachim, a senior analyst at International Data Corp. (IDC) in Framingham, Mass.

While IBM has done very little for the 3174 until this spring, competitors have provided features such as Ethernet connections, access to multiple IBM hosts, links to the vendor's Escon fiber channel and improved price/performance.

Preliminary 1993 data from IDC shows that IBM's market share in the 3174-compatible market dropped about 10% in 1992.

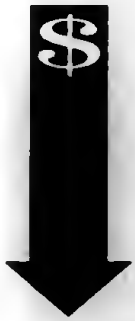
Luring users

In another attempt to boost sales, IBM shifted its 3174 sales from direct-sales channels to a telemarketing 800 number last month and is offering users 30% off the products' prices through mid-September.

Moreover, IBM announced full 3174 support for its Advanced Peer-to-Peer Networking (APPN) Network Node protocol. This will enable the cluster controllers to communicate with other APPN Network Node devices, such as 6611 routers and hosts running the soon-to-be-shipped VTAM Version 4, Release 1, the IBM spokesman said.

APPN Network Nodes coordinate routing and resource directories across an APPN network. So far, none of IBM's competitors provide APPN Network Node support.

Since June 1991, the 3174 has been able to act as an APPN Network Node, but only over bridged Token Ring LANs. The APPN enhancements for the 3174 are scheduled to ship on June 25.



Sales sliding downhill

The 3174 installed base in 1991 was 333,020. It was approximately 12% less in 1992, according to preliminary International Data Corp. 1993 data.

In other news

Also announced was 3174 support of the Simple Network Management Protocol (SNMP) Management Information Base II protocol, which enables SNMP-based systems such as IBM's NetView/6000 to manage 3174s.

IBM also revealed that it would implement multiprotocol frame-relay support on the 3174 Network Server. This will enable users to "pump SNA, APPN or TCP/IP traffic through the 3174 and out over a frame-relay network," the spokesman said.

Frame relay provides users with more effective use of wide-area links by eliminating error-detection and correction functions and their associated overhead. The feature could ship as early as first-quarter 1994, according to the company.

Also slated for shipment within a year is Escon support for the 3174.

The Networking Servers range in price from $9,160 for a base model to $14,580 for support of 64 ports. An adapter that allows a 3174 to be upgraded to Network Server capabilities is priced at $4,045.

The servers and adapter are scheduled for December shipment.

Ethernet options broaden with 'two-way' data transmission

CONTINUED FROM COVER 1

bandwidth, doubling the LAN's performance to 20M bit/sec. and eliminating collisions. This could be useful in allowing Ethernet to carry real-time applications such as videoconferencing, which entail simultaneous sending and receiving, said Michael Skubisz, director of product management at Cabletron.

His company plans to introduce full-duplex Ethernet PC cards and a switching module for its smart hubs early next year at prices "not much higher" than today's Ethernet.

An IBM spokesman said IBM will announce full-duplex adapter PC cards next month with availability "immediately following." He was not able to confirm, however, whether a corresponding switching module for the company's 8250 smart hub is under construction.

While users said they were intrigued by the technology, they acknowledged that the barrage of investment-protecting, high-speed LAN alternatives hitting the market today will make them hesitate to be guinea pigs with any one of them.

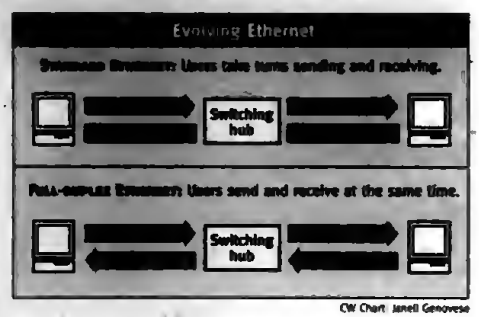
"I'll look at [full-duplex], but I'm also waiting for 'fast' Ethernet," said Robert Gullett, information center manager at Allied Van Lines in Naperville, Ill. "With so many things coming out, I don't want to spend a lot of money right away and be first on my block."

"I'm interested in faster Ethernet of some sort. But we might wait for 100M bit/sec. Ethernet or CDDI [Fiber Distributed Data Interface over copper wiring] because the speeds are higher," added Matt Repko, operations administrator at Firmenich, Inc., a chemicals company in Plainsboro, N.J.

In January, Cabletron submitted a full-duplex technology proposal to the Ethernet standards committee, where it is queued up behind 100M bit/sec. "fast Ethernet" for standards consideration. Products for fast Ethernet, which retains the speed-lowering, shared nature of today's LANs, are expected in the second quarter of 1994, according to analysts.

LAN vendors offered varying opinions. "If you're going to change Ethernet, why not go to 100M bit/sec.?" asked George Prodan, high-speed product line manager at 3Com Corp. After all, "100M bit/sec. Ethernet could be implemented as a switched technology, too."

However, "Ethernet switching provides a model for ATM," said Mark Juliano, director of marketing at Fore Systems, Inc., an Asynchronous Transfer Mode (ATM) LAN start-up in Pittsburgh. "When we say ATM is 155M bit/sec., we mean 155M bit/sec. in both directions. Now the 10M bit/sec. speeds attributed to Ethernet mean 10M bit/sec. in both directions, too."



CW Chart: Janell Genovese

Price cut takes ATM technology Fore-ward

By Joanie M. Wexler
PITTSBURGH

Progress will continue this week with fledgling Asynchronous Transfer Mode (ATM) technology as Fore Systems, Inc. said it plans to reduce the price of its ATM local-area network switch by nearly 40% today.

The company also said it will roll out a high-end ATM adapter card, developer's kit and wide-area switch interface module during the next few weeks. ATM is an emerging high-speed switching technology designed to carry a mix of data, video, voice and image traffic and to eventually blend LANs and wide-area telecommunications networks.

Fore intends to drop the price of its 16-port ForeRunner ASX-100 switch to $27,950, or about $2,995 per port. Earlier this year, the company slashed per-port charges for its high-end, 64-port switch to $2,500 [CW, March 8].

"It's amazing to see a technology barely a year old dropping at these rates," said Nick Lippis, president of Strategic Networks, Inc., a consultancy in Rockland, Mass. "This is a good sign of things to come."

Meanwhile, Fore said it will announce next week a $2,495 network adapter card for Sun Microsystems, Inc. SPARCstations that can saturate an ATM network at 100M or 140M bit/sec. speeds. To date, the S bus saturates Ethernets but causes a bottleneck on 100M bit/sec.-and-above LANs, Lippis said.

Fore also plans to roll out a developer's kit this week that lets programmers write applications to Fore's proprietary ATM application programming interface and bypass Transmission Control Protocol/Internet Protocol to alleviate application bottlenecks, said Mark Juliano, director of marketing. Also on deck is a $6,900, four-port Synchronous Optical Network wide-area interface for its switch, slated to ship in three weeks, he said.

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PC Week - May 10, 1993



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Study: Computer ROI averages 54%

MIT report disputes contention that technology is not helping productivity

By Rosemary Cafasso
CAMBRIDGE, MASS.

A soon-to-be-released study from MIT contradicts the theory that there is little payback from information systems spending by claiming that major corporations are showing average annual returns on investment (ROI) of 54% on their computer purchases.

The study, completed by the Center for Coordination Science at the MIT Sloan School of Management, is certain to stir up even more debate on an already controversial topic.

Several earlier published reports show no meaningful productivity improvements from technology investments, and experts differed as to why. Some claimed the reason technology is not showing much return is because it has been mismanaged for years. Further, they now detect some productivity improvements because of better management.

Industry experts who reviewed this latest study last week said the MIT work provides a new perspective on IS spending and productivity, but they also said it was a limited view of a complex issue. The report targeted spending of centralized IS organizations at Fortune 500 companies only. It also failed to measure the impact of distributed systems, PCs, telecommunications or personnel.

"My first take is it is narrow and [focused] on an area where the action isn't," said Michael Ashmore, a vice president at CSC Index, Inc., who heads up his firm's Information Systems Practice Group.

The MIT study, conducted by Erik Brynjolfsson and Lorin Hitt, will be released late this year at the International Conference on Information Systems. It tracked IS spending at 400 of the Fortune 500 companies between 1987 and 1991. It collected data on all major spending categories — or inputs — that potentially effect a company's output, or revenue.

Using statistical modeling and regression analysis techniques, the study isolated computer capital purchases from all other inputs. After accounting for the other inputs, it then determined that when changes to computer capital were made, revenue would either rise or fall.

Computer/revenue ratio

For those companies that increased computer capital, revenue increased. Therefore, the study suggests that the so-called "productivity paradox" has disappeared, at least for this group of companies. Further, it states that computer capital annual ROI in manufacturing companies averaged 54% and 68% when manufacturing company data was combined with service company data.

The productivity paradox was supported by earlier studies from industry experts such as Stephen Roach, co-director of global economic analysis at Morgan Stanley & Co.; Paul Strassmann, former chief information officer at the Department of Defense; and Gary Loveman, professor of business administration at the Harvard Business School.

Last week, Brynjolfsson pointed out that his work focused on firm-level data, which provides more insight than many previous studies that focused on industry averages. And, he said, it is more current than studies that used data from the late 1970s and early 1980s.

However, Loveman said that while the MIT study shows "there is some evidence that some companies have been able to make better use of technology," he also had some concerns with it. For instance, the study's focus on central IS spending cannot tell the whole story because of the increases in total IS spending that went to decentralized computing between 1987 and 1991.

Further, Strassmann said he found the study to be "fundamentally flawed" because it did not focus on the full labor input, which can account for upward of 90% of a company's total inputs.

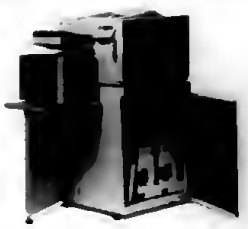


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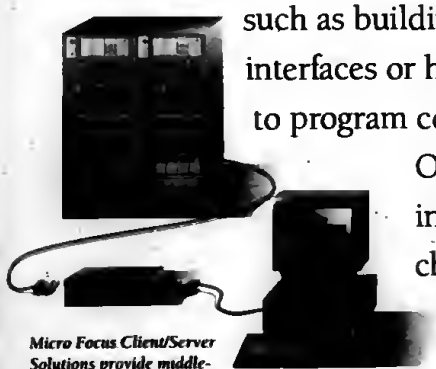
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GSA Contract Number GS00K90AGS5251-PS02

Broadband networking

Telco, TV could broaden local-loop options

By Joanie M. Wexler
NEW YORK

■ US West and Time Warner Entertainment are skillfully maneuvering around regulatory mines to jointly build interactive switched broadband networks — a coup for businesses stifled by a largely uncompetitive local telephone market.

US West's $2.5 billion investment in Time Warner, Inc.'s entertainment business, announced last week, means users should eventually see broader choices in local-area providers and services. It could also mean lower prices, spurred by the mass deployment of broadband technology, users and analysts agreed.

"Such alliances have the potential to catapult the new 'gigabit' transmission technologies we keep hearing about, such as ATM and SMDS, into affordability for the business community," said Plato Demos, manager of telecommunications planning at Union Carbide Corp. in Danbury, Conn.

This is because the industry needs the economies of scale to make these services affordable, which could result from deploying broadband networking on a mass market basis, he said.

Ready to entertain

The initial thrust of the venture will be to deliver interactive entertainment and information services to Time Warner's 7 million subscribers and to give US West access to Time Warner's entertainment and other software.

Eventually, though, the team effort to proliferate broadband networking among the islands of cable television networks "could put the local loop in the same competitive environment we've enjoyed in long-distance for almost 10 years now," said Steven A. Taylor, president of Distributed Networking Associates, a Greensboro, N.C., consultancy.

He pointed to the cost-lowering benefits from long-distance deregulation. For example, the approximate cost of coast-to-coast T1 services has dropped from $70,000 in 1987 to "at most, $20,000 today — and probably less," he said.

David Eisenlohr, vice president of telecommunications at the Pacific Stock Exchange, noted that telephone/cable TV company teamings "will give businesses whose clientele is residential more opportunities." For example, he said, "it would be a natural for a Charles Schwab or a Merrill Lynch to provide a PC connection off a TV that gives clients the real-time stock value of their portfolio's worth."

Separated at birth?

Alliances between telephone and cable TV companies will form to deliver new telecommunications services

A PROFILE OF TODAY'S NETWORKS

Geographic coverage	Ubiquitous	More residential/ less business
Number of end points	105 million	93 million
Transmission	Narrowband	Wideband
Direction	Two-way	One-way
Number of long-distance providers	700	300
Number of local providers, including resellers	1,400	2,500

Source: Insight Research Corp.

First of its kind

The bold US West/Time Warner effort is the largest coupling to date of a regulated local telephone company with a cable TV operator. However, telephone company/cable TV trials have been simmering in various regions across the country, and Southwestern Bell Telephone has made moves to purchase small cable companies outside its regulated region (CW, May 17).

Most of the telephone companies have been pushing for a reversal of Modified Final Judgment rules, which were issued at the time of AT&T's divestiture in 1984 and prohibit the regional Bell operating companies from running cable TV services or owning cable TV companies in their regions and from participating in the long-distance telephone service market (see story at right).

Some users said the phone companies have good reason. "The telecommunications business can't get its act together for love or money, and the cable companies are more market-driven," said Ron Neely, a network planner at the University of Missouri Medical Center in Columbia, Mo.

"The potential here is mind-boggling. For example, it would be extremely useful to move multimedia patient data, such as radiology, charts and ultrasound scans, from anywhere to a physician's desktop. Today, those services are not available from a single source. And we're all looking for one-stop shopping," Neely said.

Agenda

Public-switched telephone network backbones and cable TV networks can handle broadband traffic. To deliver large-scale communications and information services on demand, the cable companies must upgrade their networks to include switching and transaction data collection and billing, Insight Research Corp. said. This will represent a large role for US West in its relationship with Time Warner.

Cry-Baby Bell?

The 1984 Cable Act prohibits local telephone company spin-offs from the Bell system from providing cable TV services within their regulated geographical territories.

To comply with these restrictions, the US West/Time Warner venture will sell the eight Time Warner companies in the US West region, which serve just 85,000 of Time Warner's 7 million subscribers.

This is no great loss, considering US West's territory is the most sparsely populated Baby Bell region, said Brian Moir, a Washington attorney who provides legal counsel to the International Communications Association user group.

However, he expressed concern that this US West tack — jumping ship on cable services within its own region — would weaken the unified front the seven Baby Bells have presented in their attempts to overturn the federal restrictions barring them from delivering in-region cable TV and interstate telecommunications services.

"There may be a split within the RBOC community about whether they want a waiver on the bans, which pulls the legs out" from under the effort, Moir said.

However, US West spokesman Steve Lang said, "We're not changing our push to ban these restrictions. We think we should be able to offer the same kinds of entertainment services that cable TV companies offer. After all, they aren't restricted from offering phone services."

In addition, Lang said, the venture is setting up separate entities in which US West will have no financial interest to own and maintain the satellite dishes that transmit signals across regional boundaries.

These are assets the Baby Bells are legally unable to hold because they communicate electronic signals beyond their regulated regions.

— Joanie M. Wexler

International X.500 directory demonstrated

By Lynda Radosevich
FAIRFAX, VA.

Efforts to create a global directory-assistance-type service for electronic-mail addresses got a boost last week when nine international vendors demonstrated the interoperability of their X.500-based directory service products.

Currently, users are installing X.500 directory products to synchronize addressing across their own organization. The next step — which requires interoperability among different X.500 products — is to make directories from external organizations available to one another. And users and pundits said they hope to establish within the next five years worldwide, electronic-mail, directory tree-based X.500-standard products.

Last week's demonstration was held under the auspices of OSInet Corp., a consortium of Open Systems Interconnect protocol users and vendors. Control Data Systems, Inc., Hewlett-Packard Co., The Wollongong Group, Inc., four European groups, Digital Equipment Corp. of Australia and others practiced looking up E-mail addresses in one another's directories.

Locally, the vendors connected over Ethernet local-area networks and used X.25 connections to communicate across the continents.

While it seems that standard-compliant products should work together, users cannot be certain of interoperability unless it is tested, said Greg Cline, research director at IDC Government in Vienna, Va.

Meanwhile, the government is stepping up its involvement in X.500. Last month an international standards group appointed the Defense Information Systems Agency's Joint Interoperability Test Center to coordinate an international testing structure. However, X.500 testing is not expected until late this year.

X.500 test results will be maintained by OSInet and are available from the Internet at coinrs6000@cos.com.

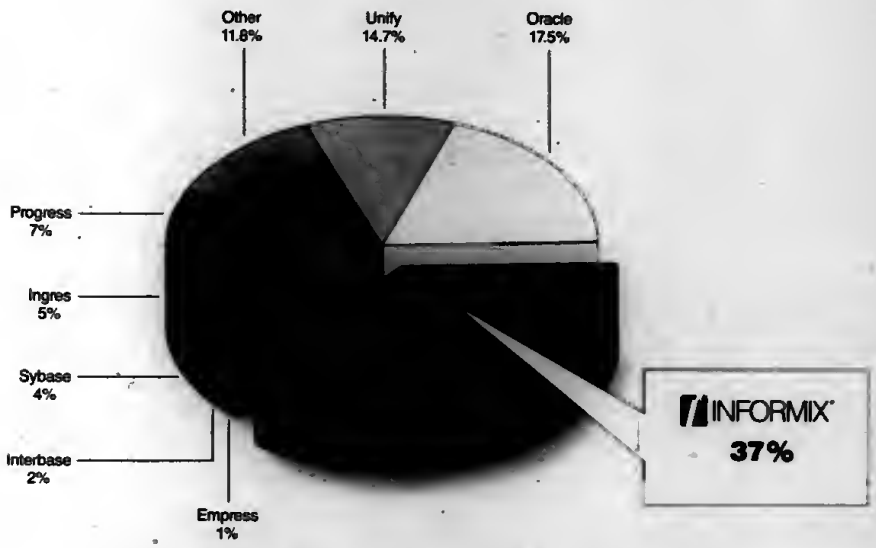
What's the meaning of this?

Compliance is when the vendor says a product meets the X.500 standard.

Conformance is when the government says it meets the standard.

Interoperability is when OSInet has demonstrated that products can connect, IDC Government said.

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Host users seek license details

Some observers wonder whether usage-based pricing plan will be fair

By Johanna Ambrosio and Thomas Hoffman

IBM may not be rolling out its usage-based pricing until 1994, but some customers have already raised red flags about possible problems, including what happens with fluctuating usage patterns and the possible overhead the measurement mechanism itself might incur.

Adding to the uncertain user reaction is the fact that IBM has not yet released specifics of how the usage model will work because it is still being developed. What is known so far is that the model will be based on a "service unit," which is similar to the more familiar millions of instructions per second (MIPS) usage measurement. But instead of measuring the overall capacity of an entire machine, as the MIPS benchmark does, the service unit will measure a specific work load and the throughput of that work load, according to William McNee, an analyst at Gartner Group, Inc. in Stamford, Conn.

IBM will work with 800 customers worldwide and with other software vendors during the next six to eight months to determine specific pricing for the new usage model and to develop a tool to help measure and bill for what customers use.

The tool will be akin to IBM's existing mainframe measuring system, called Resource Measurement Facility, which until now most users have used to help with capacity planning and other tasks. The measurement tool might be included inside the MVS operating system, or it may be included with DB2, said Marty Clague, a general manager at IBM U.S. in Somers, N.Y.

Bob Pouliot, vice president of information systems services at Mass Mutual Life Insurance Co. in Springfield, Mass., said he fears that the metered usage model could cause charges to spike wildly, especially for those shops that are transaction-processing-intensive.

"It's going to be difficult to predict software charges if you've got heavy CICS or DB2 activity," Pouliot said.

Jim Chelland, director of information processing at Kmart Fashions in North Bergen, N.J., said, "If software is needed to run this, great, but I'm not going to pay for it. I really need more meat about how this is going to work and how this will affect me."

IBM to cut prices

CONTINUED FROM COVER 1

announcement, but most said they will follow suit with no general price increases for at least a year and that they will hold the line at Group 80 tiered prices for customers who want to go that route.

Customers said they are pleased about the pricing changes, which are meant to lower the total cost of mainframe computing. As a whole, however, users reacted more cautiously to the usage model and said they will reserve final judgment until IBM provides more specifics early next year.

Rich Malone, a partner in charge of data processing at Edward D. Jones & Co., a Maryland Heights, Mo., brokerage firm, said IBM's price increases in the past have been "borderline excessive for the value that you receive. I'm hoping this is an indication that IBM has been listening to their customers."

Price choices

IBM announced two major new pricing options for host software. Per-user pricing is available for OfficeVision, SearchManager/370, DisplayWrite/370, ImagePlus/MVS and a couple other packages.

Irwin Bernstein, vice president of planning and administration at Maidenform, Inc. in Bayonne, N.J., agreed. "They seem to have done something intelligent. It all sounds very good to me," even though he said Maidenform will continue most of its new development on the PC local-area network platform.

Nevertheless, IBM is hoping that these moves will entice customers to keep their big iron around longer. "We had created an environment that was causing 'adverse selection,'" said Marty Clague, general manager at IBM U.S. in Somers, N.Y. "Our intention is to make the System/390 more competitive in the client/server environment and to allow customers the ability to run software wherever they want."

Charges played a part

Clague acknowledged that some customers had deferred consolidating two or more machines into one because doing so could dramatically increase software-license charges.

The strategy might work, some observers said. "IBM may be giving new life to the System/390 platform," said William McNee, an analyst at Gartner Group, Inc. in Stamford, Conn. "This is dramatic, and it will make it advantageous for customers to move to a bigger box." He predicted that the pricing moves will position IBM software for the company's move into parallel processing.

Although IBM has offered some options for mainframe software pricing on a limited number of packages in the past year, last week's announcement marks the first major departure from IBM's tiered-pricing model. Introduced in 1987 and widely adopted by many independent software vendors throughout the industry, tiered pricing breaks IBM's mainframe family into groups, or tiers. Whenever users move from one tier to a higher one, they pay upgrade fees.

IBM's changes follow in the path already plowed by Digital Equipment Corp. and Computer Associates International, Inc.

Third parties follow IBM lead

By Johanna Ambrosio and Thomas Hoffman

Some of the major third-party software vendors that weighed in immediately after IBM's announcement last week said they will follow in its footsteps in at least some aspects: no general price increases for a while and a rollback of the processor Group 90 and 100 prices to Group 80 levels.

In the case of Boole & Babbage, Inc. in Sunnyvale, Calif., that means refunding money to the 20 to 30 users who have already paid at the Group 90 or 100 levels, according to Dave Porter, marketing manager for business development. How that will work is unclear, but Porter said they might apply the money toward future purchases by Boole.

Porter added that the company is working with a "few" customers to develop a pricing structure that is based on the number of million instructions per second actually used by the software.

"We're working with customers to get the terms and conditions applicable to a broad base," Porter said. "As customers reach agreements with IBM on usage-based pricing, we'll piggyback on that."

Some of the other independents have already rolled out new pricing policies that typically include per-user pricing.

Arnold Mazur, executive vice president at Computer Associates International, Inc. in Islandia, N.Y., which made its new pricing schedule available earlier this year, said CA will introduce usage-based pricing and "will adopt the same or similar models for licenses" that IBM creates.

Vince Niedzielski, vice president at Candle Corp. in Los Angeles, said IBM's announcements do not really apply to Candle because the company introduced its Flexible Pricing model in February. Nevertheless, he said, Candle has no plans for a general price increase for at least the next year.

Legent Corp. in Vienna, Va., has been moving toward usage-based pricing and will continue to do so, according to senior executives. Further details were not available at press time.

BMC Software, Inc. in Sugar Land, Texas, is working with customers and with IBM to develop a measured-usage model. "We, like IBM, haven't quite figured it out," said Russ Caccamisi, director of marketing. BMC already allows customers to pay based on the partitioning of the machine, he added.

Getting to know you

For most of the 200 customers gathered at a conference center in Chantilly, Va., last week, it was their first exposure to Louis Gerstner, IBM's new chief executive officer.

Thomas Woods, information systems director at Halliburton Co. in Arlington, Texas, said he "liked" what he heard. "Lou Gerstner said the most important thing IBM will focus on is the customer." At the same time, Woods said, Gerstner "admits they have some work to do. He said they're going to become experts in the industry so they know more than the customer about that business."

In general, Woods said, the tone of the meeting was "very open, very frank. Customers asked all kinds of questions, but I didn't perceive a theme."

Most of the top IBM executives attended, including James Cannavino, who heads the PC and workstation business, and Nick Donofrio from IBM's mainframe business. Robert LeBlant, who is in charge of the U.S. marketing and sales force, hosted the meeting.

Another IBM executive who attended, Ed Zschau — chairman and CEO of the Adstar storage subsidiary — said Gerstner was pretty clear about his intention to keep IBM as one large company, even while decision-making continues to be decentralized into various lines of business. "It doesn't make sense to break up the IBM organization. By being a leader in various areas of information processing, we can offer more complete solutions to customers."

Still, some users said they remember hearing this before, when former IBM Chairman John Akers declared 1988 to be the "Year of the customer." That year was also the last time IBM gathered its major customers together and provided unrestricted access to all the company's top executives.

— Johanna Ambrosio

Downsizing dilemma

Du Pont shake-up keeps IS safe — for now

By Nell Margolis
WILMINGTON, DEL

Du Pont Co.'s recent decision to pare a middle management layer from its $3.6 billion chemical and specialty operations is unlikely to result in the cancelation of any major information systems projects currently afoot, the firm's top IS executive said last week.

Announced earlier this month, the restructuring eliminates six business sector organizations that currently stand between Du Pont's 23 strategic business units and Chief Executive Officer Edgar Woolard.



Cinda A. Hallman, *DuPont's vice president of IS, would not rule out the possibility of job cuts in IS*

Effective June 1, the strategic business units will report directly to the firm's vice chairman or one of four senior vice presidents. Each unit will also absorb any mission-critical aspects of the business sector organization to which it formerly reported.

Cinda A. Hallman, vice president of IS, did not foreclose the possibility that a projected 200- to 300-person job cut resulting from the move would nick IS' current complement of 2,500 employees.

"There may be excesses," she said. "I can't make any judgments at this time."

However, she said, large-scale initiatives under way are unlikely to die. "If a project was ongoing in or around a sector that's now no longer in existence, certainly that project will *change*," she said. But, she added, "it probably won't be eliminated." To a great extent, IS projects owe their state of grace to the fact that they were pretailored to the slimmed-down, postreorganization Chemicals Division, Hallman said.

Proper planning

The restructuring "doesn't exactly take us by surprise," she noted. The IS forces have been aware of the coming reorganization for about a year, Hallman said, "so we've been able to do all our planning consistent with it."

Acting on the early warning, she said, initiatives launched or advanced during the past year have been tagged as either leveraged projects — i.e., those widely shared across strategic business units, such as information utilities — and unit-specific initiatives.

While she declined to detail specific projects that might change, Hallman said Du Pont's long-standing partnerships with Digital Equipment Corp. and IBM will be unaffected by the reorganization.

Du Pont has streamlined its operations during the last three years, not out of desperation but because it works, said Duff & Phelps, Inc. analyst Jonathan Sherman. "They've been able to cut out about $1 billion [in costs] over the past two years," he said.

He added, "I wouldn't read too much into the reorganization. It's about the 10th one in three years."

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IBM

News Shorts

RS/6000 gets boost

IBM unveiled seven new models of its RISC System/6000 workstation line last week, using a 45-MHz processor to boost performance in four of the low-end models by 35% to 40% [CW, May 17]. The seven models represent the second wave of RS/6000 introductions in three months. Two models have enhanced support for three-dimensional graphics, and one is an entry-level deskside server. Meanwhile, **Banyan Systems, Inc.** and IBM announced an agreement to port Banyan's Vines local-area network operating system to RS/6000 servers running IBM's AIX.

House targets antitrust worries

The U.S. **House of Representatives** approved legislation designed to encourage joint production ventures between rival high-tech firms by reducing their antitrust liability from treble damages to actual damages. Current law allows joint ventures, but the legislation is intended to overcome business reluctance to form consortia because of antitrust concerns, Rep. Jack Brooks (D-Texas) said. The bill, supported by the Clinton administration, now awaits passage by the Senate.

Saranga signs with Informix

Informix Corp. hired ex-IBM executive Mike Saranga, who was key to DB2 and AIX development, to plan future database and tools products at the Menlo Park, Calif., database company. Saranga, who took an early retirement from IBM earlier this year, reports to Chief Executive Officer Phil White. Separately, Informix announced a deal with IBM to comarket RS/6000 workstations and servers.

Suite deals

Microsoft Corp. and **Lotus Development Corp.** scored wins last week in their respective battles over software suites. Microsoft announced that **Sprint Corp.** has licensed Microsoft's Office for Windows and the Apple Computer, Inc. Macintosh and plans to deploy Microsoft application software on DOS and Windows NT as well. The value of the deal was not disclosed. Lotus, meanwhile, announced that **Zurich Insurance Group** will deploy SmartSuite and Notes. Lotus CEO Jim Manzi valued the deal at $5.8 million.

SHORT TAKES **Associated Credit Bureaus**, the credit-reporting industry trade group in Washington, D.C., said that beginning July 31, its members will adopt stricter procedures on the resale of credit reports in order to better protect consumer privacy.... **Gupta Corp.** plans to announce a special promotion for **Microsoft** and **Sybase, Inc.** SQL Server users interested in Gupta's SQL Windows development tool, cutting the usual price from $1,995 to $199 through July 31, according to a Gupta source.... **Network Systems, Inc.** in Minneapolis has announced Greenline-IP, which is said to be the first host channel networking product to use the Internet Protocol as a native transport protocol.... **Computer Associates International, Inc.** and **Hewlett-Packard Co.** announced CA's plans to develop a CA-Unicenter for Unix systems management port to HP Apollo 9000 Series 700 Unix workstations. CA said Unicenter software designed for the HP 9000 Series 800 servers will ship this week.... **Aspect Telecommunications Corp.** in San Jose, Calif., has licensed object technology from **Edify Corp.** in Santa Clara, Calif., for use in a call transaction processing system.... **Borland International, Inc.**'s submission of an Xbase language reference manual has been accepted by X3J19, the technical committee for the **American National Standards Institute**, which is creating an Xbase language standard.

Chase unifies database view

CONTINUED FROM COVER 1

Chase's vice president of applied technology. "Now the question is, if we are one Chase, how do we make that seamless? All of our systems efforts are designed to do that."

That would mean the bank could supply a multibillion-dollar corporate customer in New York with an up-to-the-minute snapshot of investments made in many countries. It would also mean Chase could provide as much support and service for that customer's Asian and European operations as it does for its New York headquarters.

Banking industry analysts said Chase's move to client/server reflects broad changes in the worldwide banking landscape. While intensive transaction processing continues in centralized data centers, geographically dispersed business units provide banking services closer to customers and must be able to grab customer profiles and account data quickly.

"Making better use of the data from transaction systems is a very high priority for most banks, and [using] relational databases in a client/server environment is one of the best ways to do that," said Diogo Teixeira, president of The Tower Group, a banking technology research firm in Dover, Mass.

No big surprise

The move to distributed information systems in large banks is inevitable given the industry deregulation that allows banks to operate from coast to coast — and around the world, added James Moore, president of Mentis Corp. in Salisbury, Md. Client/server architectures will, in effect, surround the tried-and-true mainframes that process and guard vital financial data.

The chief benefits of the client/server strategy, Chase IS executives said, will be more flexible systems that can be adapted to changing business conditions, the elimination of data errors caused by re-entering data into different applications and easier maintenance of applications. Costs should also decrease, Friedman said, "purely from the reduction of mainframe usage," but he declined to provide exact numbers.

Savings will stem from some aging mainframe applications that are being re-engineered to run on the less costly client/server platform and from reduced development time.



But the re-engineering process challenges both programmers and end users. "It is no longer enough to just do a functional specification," Friedman said. "You must have an application architecture, and you must have a data architecture."

Beyond that, there will be a cultural change in the way people view their work, according to Friedman. "It's a change in the paradigm that the doers and the maintainers of this technology are used to working in," he said.

The bank has made extensive investments in client/server technology to gain a competitive edge (see chart). "We got a real jump on the rest of the industry when we started to apply client/server technology back in 1988, putting our infrastructure in place," Goldman said, referring to an enterprise network of linked Novell, Inc. LANs. Of 22,000 PCs in Chase offices worldwide, some 12,000 are already on Novell LANs.

LAN foundation

The client/server layer is being built on top of the NetWare LAN using Sybase, Inc.'s SQL Server relational database management system. Sybase's System 10 will soon have a "replication" server that can copy critical data across multiple servers for use in remote offices worldwide.

Sybase System 10 Replication Server, which is not yet shipping, will be used for selected time-critical applications such as global securities trading. "One [type of] application may very easily accommodate replication every 24 hours," Goldman said, "but if you're dealing with customer inquiries, you damn well better have the last transaction."

Although Replication Server is unproven technology, Peter Kastner, a vice president at Aberdeen Group in Boston, said using it is not a risky proposition for Chase because it is an extension of working technology that propagates database updates.

"Computer scientists have been writing about the whole topic of [replication and] database locking for years. The Replication Server is an innovative use of well-understood technology," Kastner said.



Source: Computerworld Premier 100

Bank spices enterprise with client/server potpourri

Besides Novell LANs and the Sybase database management system, Chase Manhattan's corporate standards include Microsoft Corp.'s Windows, Lotus Development Corp.'s Notes groupware package, Sun Microsystems, Inc. workstations, Ethernet and Transmission Control Protocol/Internet Protocol.

The architecture also supports access to data residing on IBM's DB2 and Software AG of North America, Inc.'s Adabas databases.

With New York as a test bed, the wave of Sybase client/server applications will flow around the globe. Additional applications are already being piloted in Europe and are planned in Asia. Sybase systems are currently being used in New York by several hundred bank employees.

—Jean S. Bozman

Tried and true

Chase designers are building new systems that empower business units to make data extracts of IBM DB2 databases at data centers. New trading applications are being written to run on Sun workstations. Other database-intensive applications may use some powerful NCR Corp. Unix machines with parallel processing. Some of the client/server applications are rewritten versions of aging mainframe and minicomputer applications.

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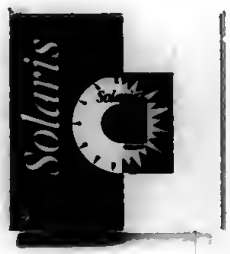
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TOCK

Users seek fit for Pentium boxes

By Michael Fitzgerald
ATLANTA

Comdex/Spring '93 will give users their first looks at Intel Corp. Pentium boxes — on display, if not yet for sale — from a number of vendors.

Users contacted in advance of the show expressed little interest in deploying Pentium-based systems, citing high costs. Some, however, said they eagerly anticipate both Pentium and its reduced instruction set computing processor rivals, such as the IBM/Motorola, Inc./Apple Computer, Inc. PowerPC initiative and Digital Equipment Corp.'s Alpha. These bleeding-edge users said they expect to gain the ability to do things they have been unable to do before.

For instance, at the Atlanta-based Centers for Disease Control and Prevention (CDC), the Pentium-led next generation of hardware technology is expected to help the agency take a big step into the future.

"We want to build a database running on a virtual network that creates a single intelligent machine across multiple databases so that the system making the query doesn't need to know where the database is and doesn't need a central index; it will just find the information," said Louis Kahn, a network administrator at the CDC. "That isn't going to work on a 486," he added.

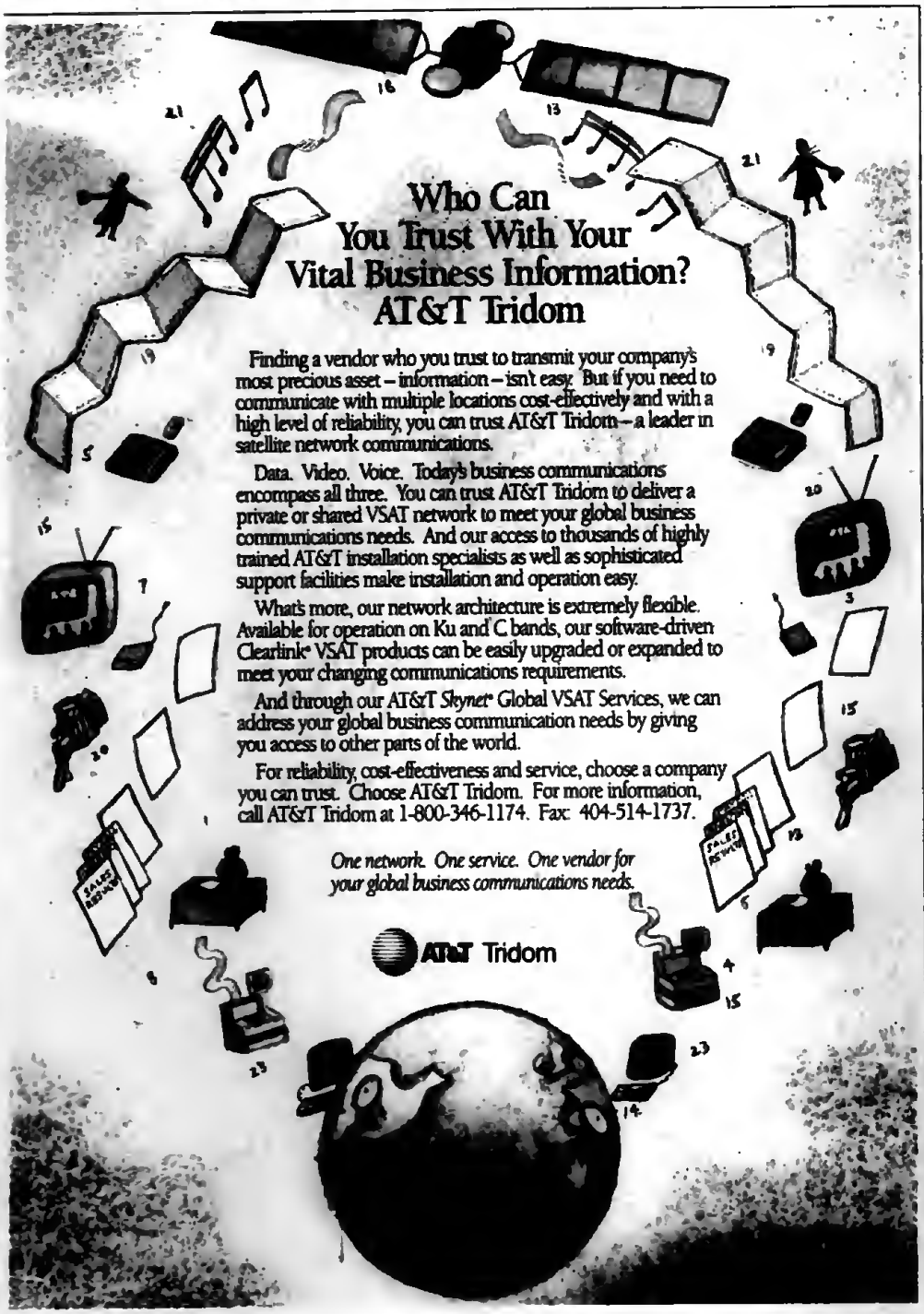
A familiar path

For the most part, though, Pentium-based systems (see chart page 40) are expected to follow the same server-to-desktop adoption cycle as did earlier Intel chips. Even early adopters of Pentium are looking to the chip to gain a power boost for day-to-day applications.

John Miller, director of office systems technology at Irving, Texas-based GTE Telephone Operations, said that while his company "sees [Pentium] as the processor that lays the foundation for us to build multimedia applications," systems will initially be deployed to boost local-area network performance.

"It took about four years for the 486 [to become the best-selling processor], and the 486 to Pentium will have the same cycle," said Richard Zwetchkenbaum, an analyst at International Data Corp. (IDC) in Framingham, Mass. IDC predicted that the crossover will occur in late 1996, with 1997 being the first year when Pentium is the best-selling chip.

Most users said they will begin buying Pentium boxes in bulk when prices get down to today's 486 levels. Most Pentium systems will cost more than $5,000 in base configurations, while 486 systems can be found for less than $2,000.


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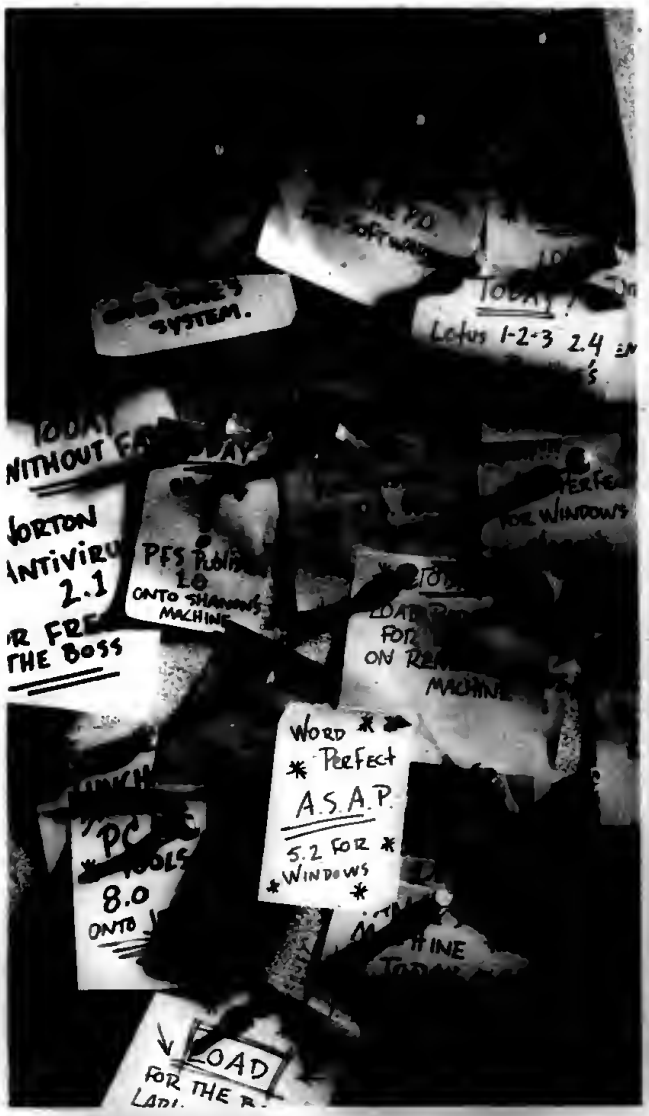
A side issue for Pentium is the upgrade socket in existing PCs. Most vendors are billing as "Pentium-ready" PCs that have a version of Intel's OverDrive chip upgrade socket, which was designed for a stripped-down version of Pentium known as the P24T. Analysts said the P24T may not be an effective way to upgrade to Pentium.

"How many of those systems have been tested with a P24T? Zero," said Kimball Brown, an analyst at Computer Intelligence/Infocorp in Santa Clara, Calif. The P24T will not ship until 1994.

Intel acknowledged that it has not kept tabs on systems vendors to make sure they are correctly implementing the P24T upgrade socket. The company said it believes most vendors have implemented the P24T socket correctly, adding it had previously established a program to work with vendors that did the job wrong.

Problems with the P24T may be moot, though, as users have tended not to upgrade systems.

—Michael Fitzgerald





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IBM LAN Server	**802.3*
	Token Ring (4/16 Mbps)
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HEWLETT PACKARD

486 notebooks step into the limelight

By Michael Fitzgerald

Driven by price drops and megabyte-thirsty Windows software, notebook buyers are shifting to the 486 processor.

Looking to catch this wave in time for Comdex/Spring '93, NCR Corp. introduced its first 486-based notebooks last week, and Toshiba America Information Systems, Inc. today will expand both its low- and high-end lines with 486 processors.

They join vendors such as Compaq Computer Corp. and Texas Instruments, Inc., which also expanded their 486 product lines recently (see story page 40).

"This is the year of the 486 in notebooks," said Jeffrey Friedericha, group manager of product marketing at Toshiba, which expects 486 notebooks to make up 55% of its sales this year.

NCR introduced three models of the 3150, a 25-MHz 486SX-based notebook, and became much more aggressive on pricing. For example, a 5.5-pound monochrome version sells for $1,925, and NCR's 386SL-based 3170 currently has a base price of $2,000, down from $5,399 when it was announced in March 1992.

The Toshiba systems — color and monochrome versions of the T4600 and the Satellite T1900 — have Personal Computer Memory Card International Association (PCMCIA) drives. The Satellite line has an impressive new passive-matrix color screen technology that greatly improves the display and will sell on the street for as little as $2,495.

Several corporate information systems managers reinforced the shift to the 486, saying 386-based systems frequently bog down when running Microsoft Corp. Windows applications.

The Torrington Co., a billion-dollar division of Ingersoll-Rand Co. in Torrington, Conn., intends to outfit its 120 sales representatives with notebooks, and 386-based units will not be considered, said Enrique Crespo Jr., Torrington's manager of corporate sales systems.

"Prices on the 486 have dropped so much that it doesn't pay for us to buy a 386, especially given the way technology is changing," Crespo said.

"It's only $200 or so more for a 486, and if you run Windows on your notebook, it's worth the extra money," said William Lodge, a project leader at The Turner Corp., which is also buying 486s.

The 486 portable market will grow from 100,000 units last year to 1 million this year, making up all the growth in the U.S. notebook market, according to BIS Strategic Decisions in Norwell, Mass. BIS analyst Jeffrey Henning forecast that 386 sales will fall from 1.5 million last year to 1.1 million this year, virtually identical to the number of 486 unit sales.

The T4600 refreshes Toshiba's T4400 notebook line, adding Intel Corp.'s new 33-MHz I486SL chip and the potential for a 340M-byte hard drive. It also includes support for the not-yet-official PCMCIA Type IV specification. The base price with a 120M-byte hard disk is $4,699. Monochrome versions start at $3,299.

For NCR, a 6.1-pound 3150 with a double-scan, passive-matrix color screen and a 120M-byte hard drive costs $2,815, while the 6.3-pound, active-matrix color version with a 170M-byte drive is $3,805.

The 3150 line has a floppy and a PCMCIA drive and will be the first product that works with NCR's new WaveLAN/PCMCIA card, which will give wireless connection to a local-area network.

The color versions come with nickel-metal hydride batteries, BitFax 2.0, AT&T Mail AccessPlus 2.4, Windows 3.1 and on-line documentation. The products are due to ship next month.

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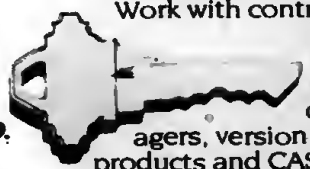
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NT: Not quite ready for prime time

By Christopher Lindquist
ATLANTA

■ On the eve of Windows NT's formal — and long overdue — introduction, it appears that the anticipated Windows NT revolution may turn out to be more of an evolutionary event.

For starters, while Windows NT will be the subject of much fanfare at Windows World here this week, after the bombast dies down, customers can expect to walk away with little more than promises.

That is because Microsoft Corp.'s next-generation operating system may not be widely available for 90 days.

Once it does ship, users will encounter yet another wait while Microsoft addresses what is perhaps the biggest issue with Windows NT today: its hefty size, which at the moment lacks a suitable platform.

Caution: Rough road

And even if everything else were copacetic, analysts always recommend against a sudden shift to a new operating system.

In interviews last week, analysts said they were quick to caution anyone who thinks Windows NT may be anywhere near 100% solid when it first ships.

"Anything of the complexity and size of NT has to be looked at in the early stages as completely experimental" and in need of large interactions with a large number of users in order to catch all the bugs before it can be deemed solid, warned Amy Wohl, president of Wohl Associates in Sala Cynwyd, Pa.

Where angels fear to tread

"Anyone who uses NT as an operating system in '93/'94 is foolish," Wohl added, noting that she has told her clients to buy a few copies and "beat the heck out of it." They should find the bugs and tell Microsoft to do something about them, Wohl advised.

Meanwhile, Windows NT as of this week is still in beta testing, even as a lengthy line of third parties queues up to sing its praises and offer support. "Microsoft will have something out by the end of summer," Wohl said, noting that the company is under great pressure to do so.

One of the first significant hurdles for Windows NT is one that will not be addressed, at least not in the first version. When Microsoft began discussing the requirements for Windows NT some months ago, NT was described as needing a 386 with 8M bytes of memory to run properly. That is much more than IBM's OS/2 2.1.

The shipping version comes in a bit hefty: Users will need at least 12M bytes of memory to run it (see chart).

Focus on brawn

Size and performance are indeed the first words out of most mouths concerning Windows NT. It would "be nice if it were a little faster, be nice if it was a little slimmer," one beta-test user said. "It's not that there's anything functionally missing now; [it is a] question of performance optimization and getting all the weird things to run on it."

Getting "weird things" to run on Windows NT points out the second major issue some beta-test users have with the product: its support for 16-bit Windows and DOS applications.

While beta-test users reported that support for applications has improved and is far beyond the "100 top applications" Microsoft originally said it would support, certain applications with device drivers, such as fax and scanner software, will have to be rewritten to work under Windows NT's security scheme.

Another area that has improved for Windows NT is Novell, Inc. NetWare support. NetWare users who have tested the newest version of the NetWare NT Requester said it appears solid.

However, none of the users contacted said they plan to adopt NT on a broad scale anytime soon, citing as reasons desktop hardware limitations and indecision about which 32-bit operating system to choose.

West Coast correspondent Michele Dostert contributed to this report.

Nowhere to run

According to Bill Higgs, vice president for software research at Computer Intelligence/Infocorp in Santa Clara, Calif., Windows NT "lacks a hardware installed base that's able to run it. It needs an amount of RAM that's on less than 1% of the systems out there."

Tale of the tape

Who wins? It all depends on what you're looking for.

	Windows NT	OS/2 2.1
Memory required	12M-16M bytes	2M-4M bytes
Number of beta-test users	80,000+	30,000
Available applications	130	IBM claims more than 1,200
Support for 16-bit applications	Runs most 16-bit Windows and DOS applications; some require special "Virtual Device Drivers"	Runs most 16-bit Windows, DOS and OS/2 applications, including Windows 3.1 programs
Ship date	June 1993, but could be as late as September	June 1993
Price	$495; Upgrade $295	$249

Microsoft

CONTINUED FROM COVER 1

will allow OLE 2.0-compliant applications to communicate.

In addition, Microsoft will support non-Microsoft systems, such as Unix clients and hosts and Apple Computer, Inc.'s Macintosh, in order to keep things as flexible as possible for customers.

We are "trying to put into place a multivendor, open computing environment," said Dwayne Walker, Microsoft's director of Windows NT and networking products.

The open question

Despite Microsoft's claims of "openness," some still view the company as quite proprietary, demanding complete control of core technologies.

"Open client/server architectures are going to be here this year," said Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C.

At least one Microsoft customer said he had little faith that open systems could solve his problems.



Not what it seems

Microsoft will showcase more than 130 Windows NT applications at Windows World this week, with at least half of those packages falling into the realm of application development tools. About one quarter of the software is system utilities and networking software. End-user applications account for only about 10% of the mix.

"What I'm interested in is solutions, not theory," said George Roukas, systems director at a Fortune 50 financial services company. "Microsoft makes things work; the Unix world does not."

Microsoft acknowledged that it cannot support a client/server infrastructure on its own. Instead, the company will focus its efforts on its strength — writing software — and on working with partners at all levels to develop and support installations, Walker said.

More support staff

That does not mean Microsoft will not work directly with customers. The company has expanded its support staff to more than 2,200 people, including some 280 Windows NT support engineers. In addition, it reportedly is hiring support staff from the Unix, minicomputer and mainframe worlds to increase its ability to deal with enterprise systems.

But making things work on as wide a scale as Microsoft is attempting is problematic. The company hopes to succeed by offering individual pieces of the architecture that provide value in and of themselves.

Windows NT still lacks some features necessary to make it a truly rich client/server operating system, according to some users and analysts. In particular, it lacks a distributed file system that would allow networks to be treated as one system rather than as a series of drives. And Windows NT is a rather large system to be run as a client.

Microsoft has announced Chicago, a 32-bit, multithreaded operating system that will combine peer-to-peer functionality and solid networking in a smaller package than currently exists with Windows NT.

At least one customer at a large financial institution does not think Microsoft fully understands the size of its task. "They don't have the resources," he said. "And it will take us man-years and man-years to be able to get ready to [re-engineer] just internally."

Other observers were more optimistic.

"I think that Microsoft has a very good handle on what is necessary to move the industry to client/server," said Tom Kucharvy, president of Summit Strategies, Inc. in Boston. It is "one of the few vendors that can mobilize the infrastructure and PR to make it successful."

Support adds target IS needs

Microsoft's commitment to Windows NT support extends to a variety of new and expanded programs, including the following:

- 30 days' free support for setup and installation.
- Support via various electronic bulletin boards and subscription services.
- A Certified Professional training program under which support personnel can be trained and certified on Microsoft products.
- A list of known bugs will be shipped with every copy of Windows NT; patches and workarounds will be provided electronically.
- A Premier support option that provides a designated Microsoft engineer with as little as one-hour response times available 24 hours a day, seven days a week.

— Christopher Lindquist

OS/2 2.1 sneaks past NT

Enhanced 32-bit system fights to stave off Microsoft challenge

By Christopher Lindquist
NEW YORK

IBM beat Microsoft Corp. to the punch by announcing the latest version of OS/2 a week before Microsoft's scheduled unveiling of Windows NT. But observers questioned whether OS/2 Version 2.1 has what it will take both to counterattack the Windows-dominated desktop and to hold off an assault from the upcoming Windows NT on the server.

When it ships June 14, a faster OS/2 2.1 will come with a variety of enhancements, including much-improved video performance, support for Windows 3.1 applications, integrated multimedia and power management (see chart page 28).

IBM also demonstrated future products that allow workgroup collaboration with an electronic white board, speech recognition/translation and "drag-and-drop" network management with LAN NetView.

On the front line

IBM will also pump up OS/2 on the marketing end, fielding a dedicated sales force for the first time ever. "We now have a dedicated sales force that will be on the front line in large accounts," said Lee Reiswig, president of IBM's Personal Software Products Division.

Other innovations include software incentives for resellers and possible bundling deals with application developers and hardware manufacturers — all of which are intended to give IBM a more visible presence in the market. Reiswig said he feels a "critical mass" for OS/2 would be about 3 million copies. The most recent figures from IBM put the total number of OS/2 copies at about 2 million.



Lee Reiswig: *Count on OS/2 marketing to be pumped up*

Vendors such as AST Research, Inc. will offer OS/2 preloading as an option. Reiswig noted that the current trend by hardware vendors is to custom-configure systems. When asked whether IBM support for NT in some areas plays to Microsoft's advantage, he said, "It has to be as disturbing for Microsoft for IBM to have AST, ALR and Dell offering OS/2."

Reiswig also said built-to-order systems will help level the playing field for operating systems by taking away some of Microsoft's advantage. Windows is preloaded on a great many PCs.

While Microsoft dribbles out Windows NT products in phases, IBM, too, will spend the rest of the year releasing various OS/2-related components, Reiswig said. Among these pieces will be a summer release of the DOS version of the Workplace Shell and delivery of the System Object Model and Distributed System Object Model later this year, along with beta testing of peer-to-peer networking support.

Also slated for a fall beta test is an early Taligent layer, "object technology frameworks," that will be ported to OS/2 and AIX, IBM's Unix version.

OS/2 2.1 will be available at a promotional price of $99 on CD-ROM or $119 for floppy disks. OS/2 users who upgrade will be eligible for a $30 rebate.

Despite these efforts, Amy Wohl, president of Wohl Associates in Bala Cynwyd, Pa., cautioned IBM against slowing down. "If they take their eye off that ball, it's going to melt again," she said.

Utilities

Windows NT management to work with third parties

By Elisabeth Horwitt

■ Microsoft Corp. has fitted Windows NT with some of the most sophisticated management utilities available for any commercial operating system, according to one beta-test user. However, the vendor is counting on third parties to provide centralized, real-time management of distributed enterprisewide NT installations.

Fortunately, there seems to be no lack of candidates for the job, including Tivoli Systems, Inc., Computer Associates International, Inc., Digital Equipment Corp. and, reportedly, Candle Corp.

Microsoft is giving systems administrators "all the essential ingredients" for managing Windows NT clients and servers through a series of utilities built into the operating system, said Claude King, senior systems analyst at the University of Florida in Gainsville.

One key utility logs system events so that the administrator can analyze the causes of a system crash or overload. A second utility monitors performance parameters such as CPU use; a third tracks software and hardware configurations.

The utilities are accessible remotely so that, for example, an administrator on a central Windows NT console can run a performance check or initialize a series of remote NT workstations.

The NT Advanced Server will ship with graphics-based applications for centrally managing user access to network servers and applications, as well as backup and uninterruptible power supplies, a Microsoft spokeswoman said.

Slated for a later introduction is a product code-named Hermes, which was designed to centrally manage a network of NT, Windows 3.1, IBM OS/2, Novell, Inc. NetWare and DOS client/server systems, the spokeswoman said.

"Hermes is designed to help people better support [client/server] networks, to track and respond to user concerns and effectively run applications off the server," she said. However, the product does not provide "full-blown, real-time monitoring of multiple network systems or mapping of the network," she added. Third parties will provide that.

Nor is Microsoft providing network management. "We'll integrate with third parties to do that," via support of the Simple Network Management Protocol, the spokeswoman said.

Tivoli plans next week to be first out of the gate with an NT management platform. The Austin, Texas, firm will announce an NT version of its object-oriented framework for managing distributed systems that already manage Unix.

Also to be announced is a Windows NT version of Tivoli/Works, the first in a series of NT systems management applications for configuration and performance management, troubleshooting and job scheduling.

The applications, from Tivoli and its partners, will roll out through next year.

Comdex

Preview

If there are three, is it still a keynote?

With an estimated 75,000 attendees, one keynote speaker is not enough for Comdex anymore. Monday's keynote is James A. Cannavino, senior vice president and general manager of Personal Systems at IBM. Windows World's keynote, Microsoft Corp. Chairman and Chief Executive Officer Bill Gates, is introducing Windows NT. On Tuesday, Robert Palmer, CEO of Digital Equipment Corp., and Jim Manzi, Lotus Development Corp. president and CEO, will give the CEO's perspective.

Is Clinton helping?

Panelists will talk about how Clinton administration technology policies might help or hinder the global computer industry in the next few years. The discussion is at the Crystal Ball Plenary session on Wednesday.

Computerworld honors Windows users

Computerworld will present awards to outstanding developers of custom Windows applications. Finalists' applications will be demonstrated at a *Computerworld* booth, and Bill Gates will present the awards at a special ceremony at 3 p.m. on Tuesday.

OLE 2.0 demonstrations

Twenty-four application developers will demonstrate at Windows World that Microsoft's Object Linking and Embedding (OLE) Version 2.0 is more than just a concept. They will show OLE 2.0 working across Microsoft's Word and the Excel spreadsheet. Third parties demonstrating OLE 2.0 applications include Blue Sky Software Corp., Calera Recognition Systems, Inc., Corel Corp., Labtech, Inc., NCR Corp., Shapeware Corp. and Summit Software Co.

Where voice and E-mail meet

VMX, Inc. in San Jose, Calif., will announce a product that delivers voice-mail notifications as part of the user's electronic-mail system. Called VMXmail, the client/server-based system works with Lotus Development Corp.'s CC:Mail and Microsoft's Mail and runs under Microsoft Corp.'s Windows 3.1 clients. On the network side, the system supports Novell, Inc. NetWare or Microsoft LAN Manager networks.

When it has to get there overnight

The fastest ships in the business and two big technology users, United Parcel Service, Inc. (which has sunk $1.8 billion into information technology) and Federal Express Corp., are exhibiting the technologies they use. Federal Express will also preview products due this summer that will let customers track packages in-house and on-line.

Put your graphics on TV

IBM will play a multimedia card by announcing, with VideoLogic, Inc., a $599 stand-alone box that converts PC graphics into video that can be displayed on projectors or televisions. IBM will also feature the latest in ergonomic design at its booth: chairs from Formineo that were designed to help people avoid problems such as carpal tunnel syndrome.

Lost in space

Sergei Krikalev, the Russian cosmonaut stranded in space for 313 days, will show how he used Videx, Inc.'s bar code reader to track inventory aboard the Russian space station.

A cooperative, productive future

Council on Competitiveness unveils vision of a 21st century information infrastructure

By Willie Schatz

THE COUNCIL on Competitiveness has seen the future, and it is a 21st century information infrastructure that will enable all Americans to access information and communicate with one another easily, reliably, securely and cost-effectively in any medium — voice, data, image or video.

The council, a nonprofit, nonpartisan group of chief executives from business, education and organized labor, unveiled its "Vision for a 21st Century Information Infrastructure" at a press conference earlier this month. (It is a capital offense to confuse this council with the Competitiveness Council, a defunct creation of the Bush administration.)

The council claims that a new information infrastructure would enhance worker's productivity and lead to dramatic improvements in social services, education and entertainment.

Four-pronged approach

The group's infrastructure is divided into four parts: 1) a set of widely accessible and interoperable communications networks; 2) digital libraries, information databases and services; 3) information appliances and computing systems that are easy to use; and 4) trained people who can build, maintain and operate these resources.

But can council members such as Cray Research, Inc., IBM, Pacific Bell, Ameritech Corp., Electronic Data Systems Corp. and Microsoft Corp. — firms that take no prisoners in the daily competitive jungle — come together to create the private sector consensus?

"The council has brought together a lot of competing industries, which will do their best to develop a common ground," said Robert Thomson, senior vice president of communications policy and planning at Tele-Communications, Inc. in Denver, the country's largest cable television station provider. "We will do that because the new information infrastructure is so important to the companies and to the country."

It is important to the country, Thomson argued, because such an infrastructure would allow everyone — from the most erudite techie to the newest neophyte — to communicate freely via an interactive, high-speed nationwide network. In Thomson's vision, such a network will guarantee that all elements of society can be heard and therefore make the country more open to diversity.

According to the council's vision statement, the means to achieving those ends include establishing short-term goals and programs that accelerate progress toward a variable-bandwidth, digital, interoperable set of networks that are easy to use and widely accessible. And rather than picking winners among technologies or choosing one technology platform, the council contends that the U.S. should pursue a multifaceted strategy that is ambitious but also flexible and realistic.

Focus on key projects

The council says it intends to profile key pilot projects and demonstration programs in areas such as health care, education and manufacturing.

Then, the group plans to set up a process to isolate make-or-break concerns and develop a core private sector consensus about what the group calls "several thorny policy issues that cut across the communications networks, computing systems and databases that constitute the physical infrastructure."

Finally, the council will work with other organizations to address questions related to the status of the information infrastructure's underlying technologies.

Schatz is a free-lance writer based in Washington, D.C.

Easing the transition

The Council on Competitiveness' most immediate objective is to make users comfortable with the technology and applications the current network can readily deliver.

Beyond that, the council has proposed three methods to provide digital service to a broad audience:

- **Target the underlying technology that will create a new platform for the delivery of goods and services.**
- **Redirect federal research and development programs toward practical U.S. business and consumer needs.**
- **Champion specific regional proof-of-concept experiments that hold promise for stimulating encouraging applications, such as "Smart Valley," Silicon Valley's attempt to bring together information services, digital devices, advanced infrastructure and people who are trained to use them.** — *Willie Schatz*

Can I borrow the keys to the dirigible?

ONE HUNDRED years ago this month, the World's Columbian Exposition opened in Chicago. Showcasing American invention and energy, this grand exposition embodied the widely held belief that technological marvels — such as commercial electrical power and telephony — had the power to transform society.

Heralding the exposition, the American Press Association (APA) in New York commissioned the nation's leading lights to predict what the world would be like 100 years hence — in 1993. Their predictions have been compiled in *Today Then* (American & World Geographic Publishing, 1992, 226 pages, $12.95), featuring 74 of these essays.

"As with futurists closing the 20th century, the 1890s APA writers frequently fell victim to two beliefs: that technology could and would solve society's problems [and] that human nature would change dramatically for the better," Dave Walter wrote in his introduction to the book.

With its mixture of accurate and wildly inaccurate forecasts — sometimes appearing in the same sentence — *Today Then* belongs in the library of any prospective prognosticator.

Its predictions include the following:

"Each reasonably well-to-do man (and there will be lots of them in the 1990s) will have a telephote [sic] in his residence. By means of this device, the entertainment of any place of amusement in that city may be seen as well as heard." — *Octavus Cohen, newspaperman, lawyer and musician.*



"It will be as common for the citizen to call for his dirigible balloon as it now is for his buggy or his boots.... The electric telegraph will be supplanted by the telephone, which will be perfected and simplified. Telephone instruments, located in every house and office, will permit the communication of business and society to be conducted by the voice at will from Boston to Moscow and Hoang-Ho, just as readily as now between neighboring villages." — *John James Ingalls, politician and orator.*

"Free [mail] delivery will be universal.... Also, the telephone and the telegraph ... will be extended to within everyone's reach." — *John Wanamaker, Philadelphia merchant and postmaster general (1889-93) under President Benjamin Harrison.*

"I presume that a [railroad train] speed of from 90 to 100 miles an hour could be secured with modern locomotives and with the improvements which are sure to come." — *George Westinghouse, inventor.* (In 1992, Amtrak's Metroliner traveled at 125 miles per hour.)

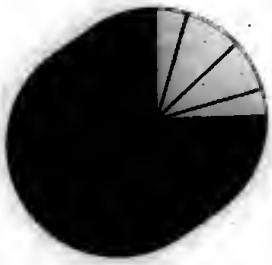
"Considerable traveling will be done by the air route.... Man has simply to invent the kind of boat.... This boat may be guided from city to city by a wire strung about 100 feet above the ground, so as to let the balloon pass over trees and houses." — *David Swing, editor and Presbyterian minister.*

Why is Compuware the company so many turn to for programming productivity tools?



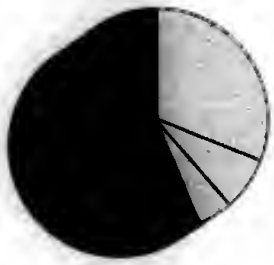
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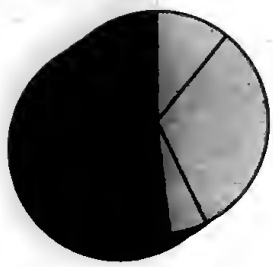
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Great expectations

You'd have to go back to the marketing foreplay of IBM prior to its announcement of the PCjr, the ill-fated home computer, to find an event as extraordinary as Windows NT.

The Peanut, as the home compnter was called, got such incredible media coverage before its arrival that it actually froze sales of competing machines during the crucial December selling season, as IBM did nothing more than orchestrate a few well-placed media leaks. Of course, the home market never materialized, and Peannts shriveled on store shelves or were sold at fire sales.

Back to NT. In the last two weeks, our office has logged scores of phone calls from vendors clamoring for attention at this week's Comdex/Spring '93 extravaganza. It seems many, if not most of them, are hawking products claiming to be NT-compatible — whatever that means.



IS publications, including this paper, have been jammed with NT stories. Market research companies have already made "firm" predictions of NT's market share in 1996.

This much is known: Hundreds of application developers have been beta-testing versions of the product. Microsoft has repeatedly said the actual ship date of NT (which a year ago was set for late 1992 or early 1993) would depend on input from the beta-test users. There are no firm ship dates in sight. Put two and two together.

Also, Microsoft originally announced Windows in late 1984 but did not have a version that was ready for prime time — namely Windows 3.0 — until 1990, after which Windows achieved outrageous successes. Windows was more or less a DOS shell. NT is more or less an entirely new, multiplatform operating environment.

This much, too, is known: The needs of corporate developers for highly functional cross-platform operating environments are both great and immediate. Developers cannot wait two or three years for a new environment to ripen, should that be the case for NT — which is not to say it will be. All that can be determined is that the development of solid NT 1.0 has been a more daunting task than Microsoft had realized. Otherwise, the product would be on sale today.

If Microsoft can deliver an operating system that successfully manages data on everything from PCs to high-performance servers to minis and mainframes, I will say right here that such a feat would be the single most significant technological achievement in the history of computing. In fact, NT needs to be nothing less than that if it is to live up to its preshow billing.

Bill Laberis

Bill Laberis, *Editor in chief*



Double trouble

I don't know where you got your information for removing MS-DOS 6.0 Double-Space, but it obviously is not from reading the instructions ["Bugs: A fact of life," CW, May 3]. In the README.TXT file, Section 7, Part 6 are the complete instructions for removing DoubleSpace, neither of which involve reformatting the hard drive.

If all else fails, read the instructions; words most PC users don't want to hear.

Denys Tull
Cincinnati

Strong case for CGI's PacBase

We have been running CGI Systems, Inc.'s PacBase in this shop for about two years, and I have been curious why more shops weren't selecting this particular computer-aided software engineering tool.

Without being too specific for fear of violating my nondisclosure agreement, I've found that CGI has been and continues to be dedicated to AD/Cycle requirements. If IBM wants to make AD/Cycle happen, all they have to do is close this deal and start pushing it into the Big Blue shops.

Let's hope they close this deal quickly. I'd love to be in the cat-bird seat on this.

Dan Alexander
Programmer
Computer Sciences Corp.
Tacoma, Wash.

Right support

Under ideal conditions, Richard Finkelstein's commentary "Don't forget support" in your Integration Strategies section [CW, May 3] makes IS management's life appear to be pretty straightforward. Unfortunately, most firms don't have ideal conditions.

Once the client/server hardware is up and running, that part of the equation is fairly stable. Problems are seldom hardware-related because today's hardware is so reliable that it seldom breaks down.

On the other hand, if a firm expects software suppliers to support software that must interact with many other software packages and is used by less than technically competent users, it will be doomed to failure.

The trend is not to rely on others to provide the support but to retain greater ownership of user support. In this way, the IS organization can serve itself — at least for the majority of the frequently asked problems/questions.

With the right help desk system in place, IS management may become intelligence management for their firms.

Greg Chambers
Sunnyvale, Calif.

Matter of metrics

"Measurement programs need vision" [CW, May 3] emphasizes the need for the strong support of senior managers if a metrics effort is to succeed. How do you get that kind of enthusiastic backing?

Many metrics programs never get that kind of support because the originator at the lower management level doesn't consistently deliver a clear message about how the organization will benefit.

One way to gain support is to just start collecting facts about one or two processes that you know are problem areas and to make a few graphs.

Let the senior manager take the public credit for the program. Just keep your graphs in a folder marked "salary review." They could make for a profitable private discussion in your future.

Bob Moran
Systems engineer
Electronic Data Systems
Piscataway, N.J.

Licensed to manage

Regarding "Users align on license demands" [CW, April 19]: What IS executives should employ is a software asset manager responsible for an inventory and budget management system. This should also include a well-planned strategy for handling negotiations with vendors for the acquisition of new software and a strategy to eliminate redundant software within a portfolio.

Until this happens, vendors will continue "laughing" all the way to the bank.

Mary Jo Hodgen
Novato, Calif.

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Forget the handcuffs: Focus on sensible licensing

Priscilla Tate

On my way out of New York on business recently, I focused for a moment on something other than the traffic. It was a billboard featuring handcuffs and a toll-free phone number. Bored but curious, I wondered what kind of "bring 'em to justice" program was being advertised. I moved closer and discovered the Software Publishers Association (SPA) was trying to tell me what they do to people who don't pay for software.



Many people think reasoned discussion makes more sense than this kind of hysteria. In 1991, for example, the Microcomputer Managers Association (MMA) published a position paper on network software licensing, partly as an antidote to propaganda put out by SPA's Anti-Piracy Committee.

In that paper, we pointed out the difficulties users face trying to understand how copies of their software may be used and distributed. We noted that there are as many different software licenses as there are software publishers, and the language of most licenses is largely based on first-edition software "legalese" written for a single-machine, single-user, non-networked environment.

Organizations such as yours and mine don't steal software. We do our best to comply with convoluted and sometimes conflicting software licenses. But we are technology managers, accountable for the smooth business functioning of our organizations. We aren't software auditors and disciplinarians whose primary purpose in life is to see that software publishers collect what is legally due them.

What we need is a path of least resistance for software use — standards that are easily understood, out threats of litigation.

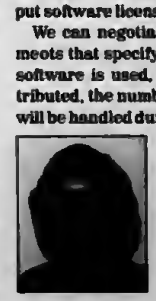
Granted, it's a legal mess. But the MMA took the lead, and others have joined us to make a series of constructive recommendations about distributing documentation and metering software for concurrent use. A few software publishers have requested and are using these guidelines.

What irks me is that there is a vocal group within the SPA that plays only one note. I have two questions I'd like to ask:

1. If this committee has initiated a new case a week for the past two years, all of which have been settled out of court, what has it done with all the money? Has it used it to buy billboard space and fund toll-free phone numbers for rats?
2. What does the SPA think litigation accomplishes? As far as I can see, the answer is nothing. Some countries outside the U.S. are moving to legalize copying of software to avoid costly litigation.

Software piracy is an ethical and social problem, raising issues that litigation alone can't solve. Instead of pointing fingers, we should be working together to put software licensing in perspective.

We can negotiate software support agreements that specify not just price but also how software is used, how documentation is distributed, the number of upgrade releases that will be handled during a given time, the level of support and how it will be provided.



The issues are complicated. But if we approach them as collaborators rather than combatants, we can all get what we want.

Tate is executive director of the Microcomputer Managers Association.

Have tools, lack talent

LISTEN UP! *by* Elaine Bond

For as long as I can remember, there has been frustration over the lack of progress in improving application development productivity. We should be over this hump by now or at least, given some of the new application development enablers I've seen recently, close to getting somewhere. But, for a number of reasons, I don't think relief will come for quite a while.



The problem isn't a lack of quality tools. There are some very powerful and promising products emerging that could dramatically improve application productivity. The holdup has to do with our current population of application developers, which is split into two camps — the old guard of mainframe-centric programmers and distributed computing types.

The old guard currently has responsibility for the so-called mission-critical applications, and because they are frequently the only ones who know how these applications work and how to tweak them for day-to-day changes, they wield considerable power.

They are the masters of what "has been" and have absolutely no incentive to try new tools or invest in learning new approaches.

Meanwhile, scattered across decentralized departments are the PC LAN cowboys. These frontier riders are willing to try just about anything that is certifiably new, but they also disdain discipline and pick up and discard with dizzying frequency. They speak C++, they think objects, and they don't know flowcharts or even what software life cycles are all about. They lack not only the power but also the experience and the skill to tackle large, complex applications.

So here we are with promising productivity aids (all of which require some investment in time, money and attitude change) and a marketplace that is seriously misaligned. Experienced application developers and analysts in powerful positions could benefit from the products now emerging but have no motivation to undertake the complete retraining required.

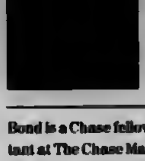
Receptive eager beavers in the distributed setting are willing to try these products but have no application portfolio on which to show off the tools and, therefore, cannot justify the investment.

This situation isn't hopeless, but it does require more and better leadership from the senior levels of IS management.

Top-level IS managers need to find and empower frontline managers who are willing and able to make the kinds of changes necessary to achieve higher application development productivity.

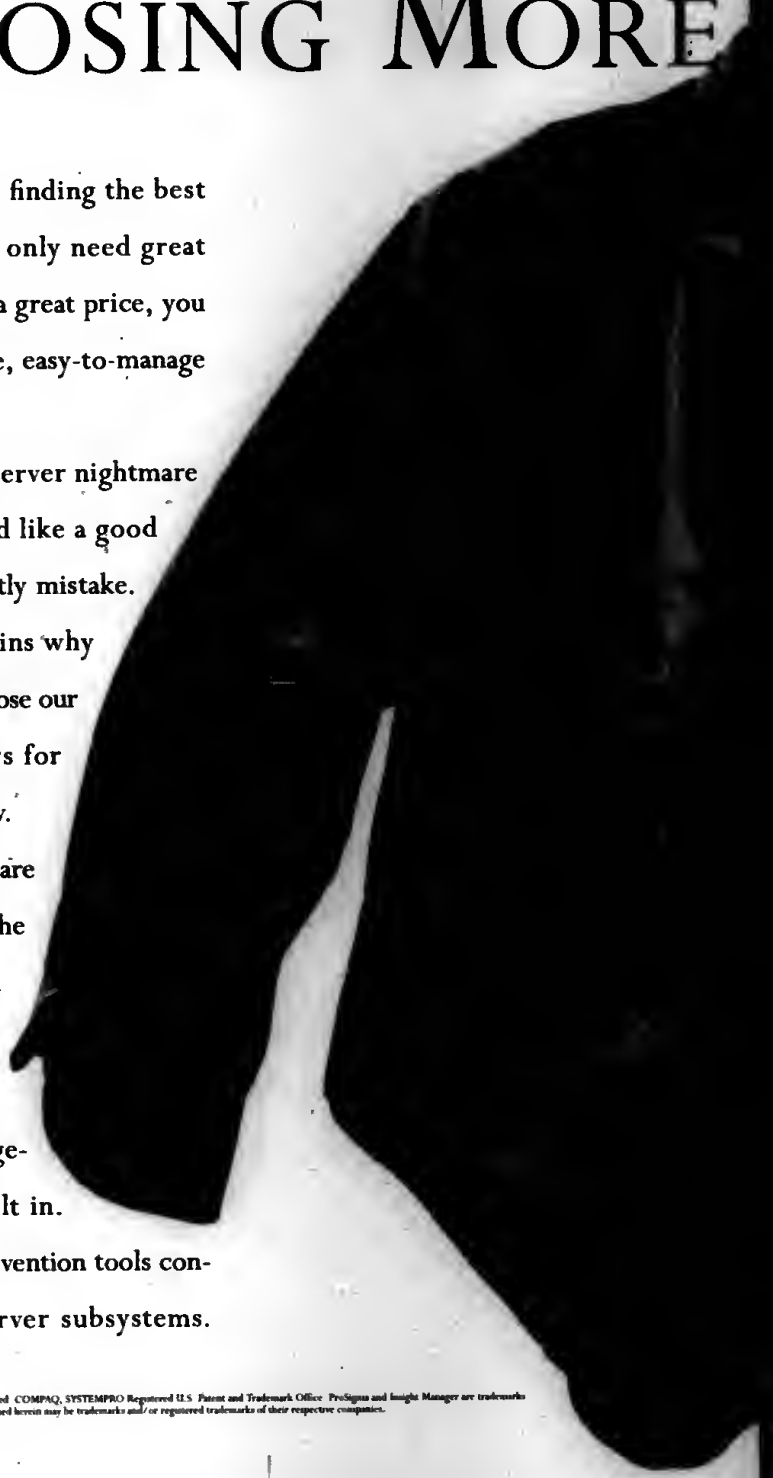
More must also be done to blend the skills of the two development camps. Mainframers and PC LAN types can learn from each other if given a push. Left to their own devices, however, they will never mingle. IS managers must be willing to dedicate some resources to scouting technologies and overseeing implementation.

Eventually, these new tools will find their way inside. The only real question is whether they will be brought in rapidly by developers able and willing to use them or find their own way in slowly, after having been equipped to replace the recalcitrant human element.



Bond is a Chase fellow and senior technology consultant at The Chase Manhattan Bank NA. She is a founder of the user advocacy group Open User Recommended Solutions (OURS).

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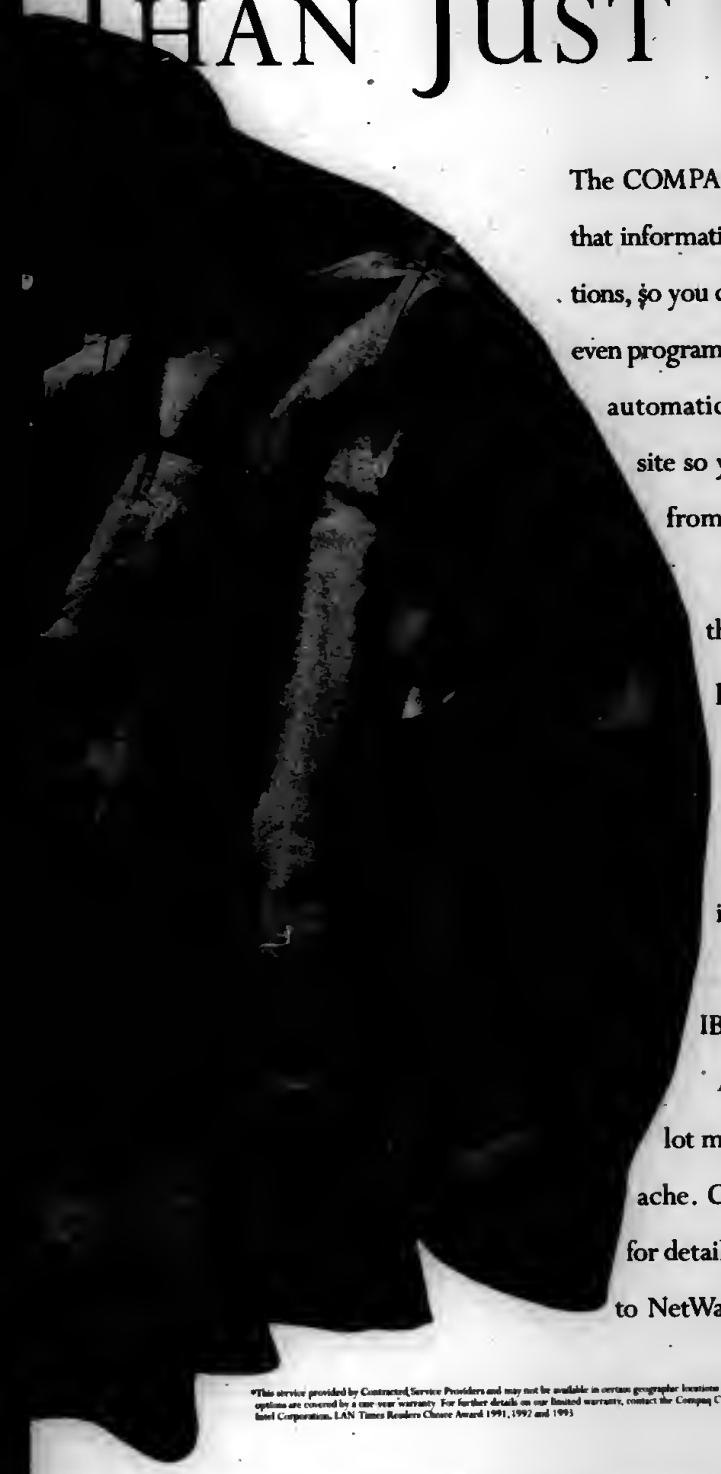
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Charles Babcock

NT: An open possibility



Will Microsoft's Windows NT fit anyone's definition of an open system? If it is anywhere near as successful as DOS and Windows, either in terms of copies installed or the size of its development community, it will end up a contender as a de facto open system.

Any attempt to label NT an open system will be furiously resisted by Unix fans, but it looks to me as if the rules are changing for those who must make decisions on moving to open systems. As far back as 1989, the Racal-Interlan book *Interoperability* signaled that a shift was in the offing, noting that standards, a key part of openness, were no longer coming out of committees. "A particularly successful product creates its own standard. Success feeds on itself," it said, in reference to Unix at the time.

One wonders how good a criterion "success" is for open systems. If Windows NT is a "success," will that make it as open as Unix? Not necessarily, but there are precedents.

A strong example of a de facto open system is Novell's NetWare, which not only dominates the LAN market with more than 70% of the market share, but has been geared to function with other vendors' technologies. It is an open system because of its owner's respect for the community of interest that has grown up around it.

Can IS managers depend on vendors to treat a product line as open? There is no safe answer to this question. As long as a vendor retains development control of a product, there is always some risk that it will be closed off and the IS manager left at the mercy of a vendor that wants to raise prices and sell add-ons.

Even if Microsoft sells millions of copies of NT, can we be sure the company will keep a broad range of competing network connections and interfaces open to it? What if third parties develop add-ons that Microsoft would rather sell?

An IS manager has to gauge the vendor's attitude toward the community of interests that come to focus on a product line. If a vendor heeds user needs, follows standards and keeps the system open to third-party developers, then I'd say a proprietary system can be described as having some degree of openness.

Recently, the Unix community moved toward putting the Windows GUI on RISC workstations. Microsoft's willingness to license Windows under Unix was directly tied to Sun's ability to put a Windows application binary interface on the market. Perhaps one guarantee of openness is competitors' ability to force the issue.

Where there is no prospect of competition, the IS manager can conclude there are fewer guarantees on openness.

Unix at this point has an "open" advantage with multiple parties collaborating on its development and competing to deliver the best version. But what if use of Unix slows? What good is an open system that no one is migrating to anymore? To be "open" and worthwhile, a system has to have a vigorous life as well as standard interfaces.

IS managers must focus on this interplay between proprietary and disinterested forces, between marketplace success and standards. Because IS managers no longer have the luxury of buying from one vendor, they are faced with the task of integrating dissimilar systems and must decide what is most likely to be sustained as an open product line.

The tension between "open" and "proprietary" will increase as Windows NT hits the market. IS managers will have to gauge its technical merits against Microsoft's commitment to openness, with no sure measure of the latter. Microsoft does have a record of supporting strong third-party development, however, and that community may serve as an effective watchdog of system openness.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

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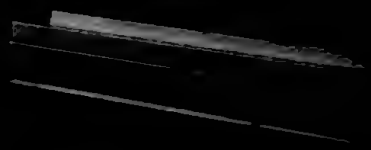


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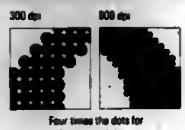
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Phone poll

Computerworld this week launches a new feature that provides readers with another way to share their opinions with their peers.

Please call our special hot line to give us a brief comment on this week's issue. You are also invited to leave your name, company and phone number. We will then print representative comments in the coming weeks.

As the desktop operating system war progresses, what should IBM do with OS/2 to counter the interest in Microsoft Corp.'s Windows NT?

To offer your comments, call (508) 820-8122 or (800) 343-6474 ext. 122.

Windows spreadsheets

Lotus woos DOS user base

By Michael Vizard
CAMBRIDGE, MASS

With the arrival of 1-2-3 for Windows, Release 4 slated for next month, Lotus Development Corp. is expected to make an all-out effort to convince the remaining users of DOS spreadsheets that the time has come to upgrade to Windows.

According to Computer Intelligence/Infocorp, a market research firm in San Jose, Calif., approximately 60% of the DOS spreadsheet market has not yet adopted a Windows spreadsheet. Unfortunately for Lotus, about 40% of those surveyed by the research firm said they do not intend to move to Windows at all.

This effectively means that Lotus' effort will consist of a dual strategy of convincing the 20% of DOS users who plan to move to Windows that they should upgrade to 1-2-3 for Windows and of convincing those users who switched from 1-2-3 to Microsoft Corp.'s Excel spreadsheet or Borland International, Inc.'s Quattro Pro spreadsheet to take another look at 1-2-3.

"I bought all the Windows applications when they first came out last year, and that's where they stayed — in the box. But I'm impressed by the new release of 1-2-3 so I think we'll start learning to use Windows," said Peter Kelly, president of Financial Directions, Inc. in San Francisco.

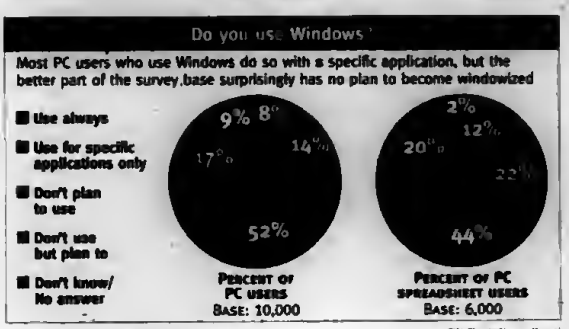
"We have 1,000 PCs, with about less than 200 of them running Windows. Conceptually, we've made the decision to move to Windows, and our inclination is to continue the relationship with Lotus because of the huge investment we have in backward compatibility and training," said Ron Kasper, senior vice president of finance and administration at Loral Aeronutronic, a Newport Beach, Calif., unit of Loral Corp. that has about 750 copies of 1-2-3 and 150 copies of Excel.

"Right now we're split about half and half between 1-2-3 and Quattro Pro users. But I expect the new version of 1-2-3 will get about half the people that move to Quattro Pro to come back to 1-2-3," said Thomas Renner, a team leader for the

Lotus, *page 44*

1-2-3, switch

Users of Excel or Quattro Pro, as well as users of previous releases of 1-2-3, can switch to 1-2-3 for Windows, Release 4 for $129. Users of 1-2-3 for Windows can receive a free upgrade to Release 4 until June 11.



Source: Computer Intelligence/Infocorp
CW Chart: Nancy Kowel

Avis saves time, money with Mac client/server system

By Thomas Hoffman
GARDEN CITY, N.Y.

Avis Rent A Car Systems, Inc. has long claimed an information technology leadership role in the travel industry, dating back to the installation of its first terminal-based Wizard reservations system in 1972. More recently, the $1.27 billion car rental agency made a splash in client/server computing to improve response time in processing reservations for customers.

Using Apple Computer, Inc. Macintoshes on the desktop, Avis agents are getting a fresh look at reservation information that they once accessed only through IBM 3270-type terminals and foot-thick paper volumes. Avis recently installed a $3.5 million client/server-based reservation processing system at its Worldwide Reservation Center in Tulsa, Okla.

GUI-based system

The Tulsa Advanced Function Terminal (TAFT) is a graphical user interface (GUI)-based system that is replacing 700 3270 terminals with Macintosh LC III PCs. A Sun Microsystems, Inc. SPARCserver 10 is being used to route reservation information from a Sybase, Inc. SQL Server relational database management system. The Sun server is linked to Avis' Wizard IBM mainframe complex here using the Transmission Control Protocol/Interconnect Protocol over an LU6.2 gateway. An IBM 3090 houses customer and rate information.

TAFT is being used to tackle the 23 million customer calls handled annually by Avis' reservations agents and has been in development for the past 18 months, according to Peter R. Tittler, Avis' vice president of networks and technology.



Avis' Peter R. Tittler and Dorothy A. Teubner *lead the development of the client/server reservations system and the savings it allows agents to pass on to customers*

Reduction realized

Six months of TAFT testing by 12 reservations agents has shown up to a 20% reduction in the amount of time agents spend processing a customer reservation over the phone. Prior to TAFT, reservations processing with clients took up to 2½ minutes by phone. TAFT has reduced that time to less than two minutes.

TAFT helped reduce the time by incorporating several improvements. Not only do agents report that the Macintosh is easier to use than the 3270 terminals were, but the Macintosh keyboards were designed with "quick keys," or a keyboard configuration that enables reservation agents to press a single key to pull up a screen to enter a customer's credit card or driver's license number. In the past, agents spent considerably more time typing in characters to enter such information, according to Dorothy A. Teubner, vice president of systems development at Avis. So far, TAFT has reduced keystroke entries by 40%.

TAFT also automatically calls up information that in the past the agent had to hunt for in books, such as insurance regulations for the region where the customer will be traveling. A key to the client/server architecture is that while one portion of the reservation is being processed on the server or information is being drawn down from the host, the Macintosh client is acting to anticipate which information —

Avis, *page 45*

On Site

Avis Rent A Car Systems
Garden City, N.Y.

Challenge: To install a system that would reduce the time spent processing reservations and training agents.

Technology: Sun SPARCserver 10, Sybase SQL Server RDBMS, Apple Macintosh LC IIIs, IBM 3090 mainframe.

Results: Reduced reservations processing time by 20%; reduced agent keystrokes by 40%; reduced training from six weeks to three weeks; projected telecommunications savings of $1 million per year.

Response team formed to handle security woes

By James Daly

Information systems managers trying to keep their arms around the rapidly evolving fields of data and network security are coming to a sobering conclusion: Their arms are just not big enough.

As a result, the computer emergency response teams of more than 20 government and private organizations in North America and Europe have joined forces in an attempt to swap tips and tricks.

The coalition, known as the Forum of Incident Response and Security Teams (First) is essentially an electronic roundtable where members exchange information on everything from opinions about antivirus software for the Apple Computer, Inc. Macintosh to the best way to secure an international network.

Data loss

PC losses in 1992 exceeded $1.2 billion, according to Safeware, The Insurance Agency, Inc. in Columbus, Ohio. Causes ranged from fire and lightning to theft.

"Information sharing is the name of the game these days," said John Kinyon, manager of network security at member company Motorola, Inc. in Schaumburg, Ill. "It's difficult to stay up to date unless you do a little hobnobbing with our fellow security wizards." Participation in First is voluntary, and member teams must fund their own involvement.

Member organizations include the U.S. Air Force, the Department of Defense, NASA, Digital Equipment Corp., Sun Microsystems, Inc., Unisys Corp., TRW, Inc., Sprint Corp., Electronic Data Systems Corp. and Westinghouse Electric Corp.

The main means of communication among members is the electronic network. "For a response team to be effective, it must have rapid communications both within its own constituency and with other incident response teams," said Dennis Steinauer, who oversees the First participation of the National Institute of Standards and Technology in Gaithersburg, Md.

First members use a variety of automatic alerting mechanisms, ranging from electronic mail to the exchange of beeper numbers, to achieve this rapid communication. First also advises clients on potential threats and emerging incident situations, such as glaring system security bugs.

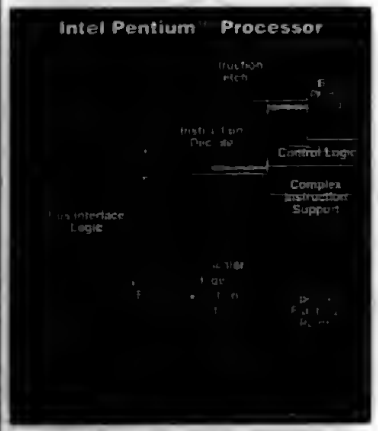
"Computer security vulnerabilities associated with information technology, such as malicious abuse or viruses, require a rapid, skilled and coordinated response to minimize damage," Steinauer added.

Although initial membership consisted primarily of U.S. government organizations, membership of private-sector organizations, universities and non-U.S. groups is growing.

Kinyon said the First electronic network is a good place to start when a security problem becomes too perplexing. "You go right to the bottom line with these guys," he said. "It's saved us a lot of grief a lot of times."

Chips

The look of Pentium boxes



Intel's Pentium chip, priced at $878 (60 MHz) and $965 (66 MHz), is up to twice as fast as the most powerful 486 processor

Intel Corp.'s release of the Pentium chip brought plenty of fanfare from hardware vendors, but most of the systems they announced will initially ship with the I486 inside them [CW, May 17]. Future versions will have Pentium chips as Intel ramps up production. Most of the products listed in the chart at right were designed to ship exclusively with Pentium chips.

PENTIUM SYSTEMS*

NCR	Processor	RAM	Storage	Base Price
[illegible]	[illegible]	[illegible]	535M bytes	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ZENITH DATA				
Z-Server EX P5/E Model 5000	Pentium 66 MHz	16M bytes	1G byte	$5,899
Z-Server LT P5/E Model 5000	Pentium 60 MHz	16M bytes	1G byte	$7,699
AST				
Premium SE	Pentium 60 MHz	16M bytes	Up to 8G bytes	$7,500-$9,500
Premmia (desktop)	Pentium 60 MHz	16M bytes	NA	$5,000-$8,000
Manhattan SMP	Up to four processors	16M bytes	Up to 16G bytes	$32,000-$36,000
HEWLETT-PACKARD				
NetServer LM	Pentium 60 MHz	16M-256M bytes	605M-9G bytes	$7,649-$17,000

PENTIUM-READY SYSTEMS*

Unisys	Processor	RAM	Storage	Base Price
PW2 Advantage Plus 5606, 5608	I486 66 MHz	Up to 192M bytes	Up to 2.1G bytes	NA
U6000 100, 300	I486 66 MHz	Up to 192M bytes	Up to 2.1G bytes	NA
ZENITH DATA				
Z-Server EX 486/33E Model 500	I486 33MHz	8M bytes	535M bytes	$4,999
Z-Server LT 486/66E Model 500	I486 66MHz	16M bytes	535M bytes	$4,699

*Sampling of current systems NA: Not available

Compaq, TI shore up notebook lines

By Michael Fitzgerald

Fields full of notebooks are hitting the market as vendors round out product lines, including the following products that were announced last week.

No PCMCIA for them

While most of the big players in the notebook market have already added Personal Computer Memory Card International Association support to their notebooks, both Compaq and TI continue to shun the standard.

For now, this does not hurt them, said Ted Julian, an analyst at International Data Corp. "In the real world, the marketplace doesn't seem to mind so far."

•**Compaq Computer Corp.** added three models to its LTE Lite series. The 4/33C uses Intel Corp.'s newly shipping 33-MHz 1486SL processor and features an active-matrix color screen. The 4/25E and 4/25 both use the 25-MHz SL, but the 4/25E adds an active-matrix monochrome display. All three come with either a 120M-byte hard drive or a 210M-byte hard drive and 4M bytes of random-access memory. They weigh between 6.3 and 6.5 pounds and are touted as offering from two to five hours of battery life. Prices for the LTE Lite series start at less than $2,699.

•**Texas Instruments, Inc.** released three new models of its TravelMate 4000 product line. Topping out the line is a 25-MHz/50-MHz DX2 chip with an active-matrix color display. TI officials said the company had picked a small 8½-in. display because it was easier to produce than larger 9½-in. screens, and it can be shipped in higher volumes.



Texas Instruments' TravelMate 4000E WinDX2/50 ships with a 200M-byte hard drive and Windows for $4,999

TI's TravelMate 4000E WinDX2/50 weighs 6.2 pounds and will cost $4,999 when it starts shipping next month with a 200M-byte hard drive and Microsoft Corp.'s Windows.

The product meets the Environmental Protection Agency's Energy Star program and can get up to three hours of battery life.

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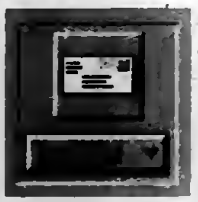


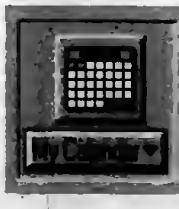
You know how companies operate. Large or small, local or global, they operate on meetings. Memos. Deadlines. And paperwork, paperwork, paperwork.

If you've ever had to make ten calls to get four people in the same room at the same time, or wait three days for a purchase order from the eighth floor, you know how well the system usually works.

but meetings, appointments, tasks and paperwork — all the basic, relentless stuff of business. It automates the flow of work and information through (and throughout) your company.

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But now there's a new system — a single, cross-platform workgroup application that can handle all your internal business operations and communications electronically. It's WordPerfect® Office™ 4.0, the first "operating system" for companies.

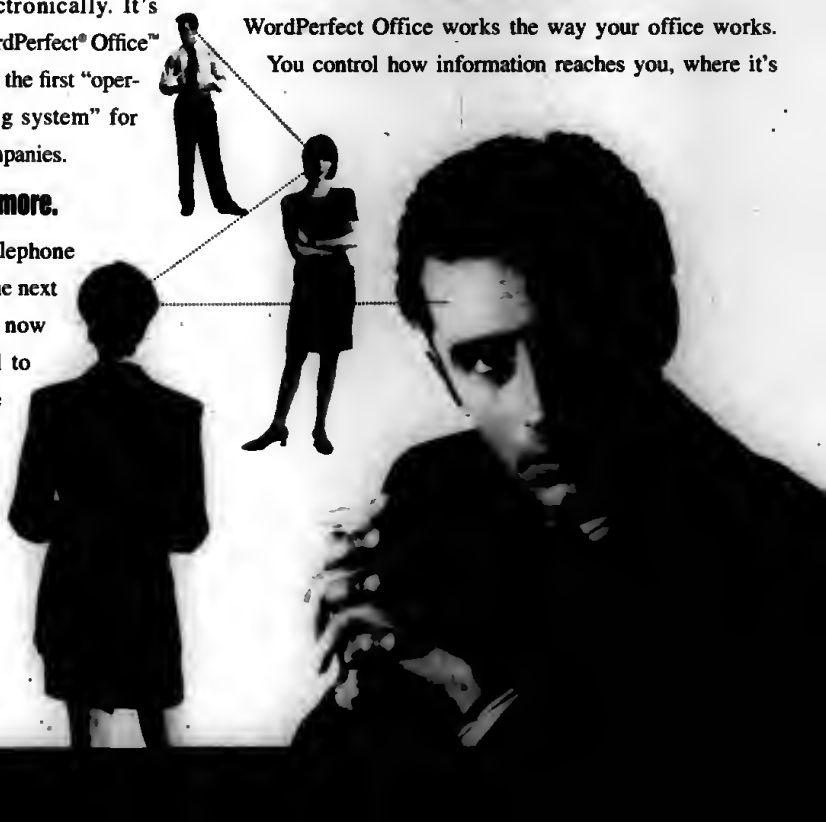


E-mail isn't enough anymore.

Organizations still driven by the telephone and the mail cart may see e-mail as the next logical step. But WordPerfect has now advanced the technology of e-mail to a higher level. WordPerfect Office "mail enables" not just messages, e-mail engine. There's nothing else like it available today, and perhaps surprisingly, it's available for the cost of e-mail alone.

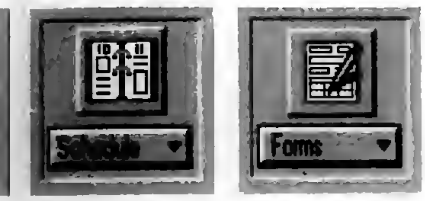
You make the rules.

WordPerfect Office works the way your office works. You control how information reaches you, where it's



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work — and all of the paper — out of routine office paperwork. Now you can sign off on timesheets, invoices and other business forms electronically and send them up the line for approval, or distribute them anywhere in your organization instantly (including to virtually any desktop or SQL database).

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To bring the unique benefits of the corporate operating system to as many companies as possible, we developed WordPerfect Office for LANs of as few as five users and WANs of as many as 100,000. And as you'd expect from any WordPerfect product, it's a highly capable cross-platform package, supporting communications on Windows, DOS, Macintosh, UNIX, OS/2 and VAX/VMS.

For connections to existing e-mail systems and communication between dissimilar systems, WordPerfect offers a long list of gateways, including Novell MHS, IBM PROFS and OfficeVision/VM, SNADS, X.400, SMTP, MCI Mail, AT&T EasyLink and FAX. Perhaps most



importantly, the program supports full directory services to greatly simplify the sharing of names between systems. And we offer diagnostic and management services to make configuring, monitoring and maintaining your system easier.

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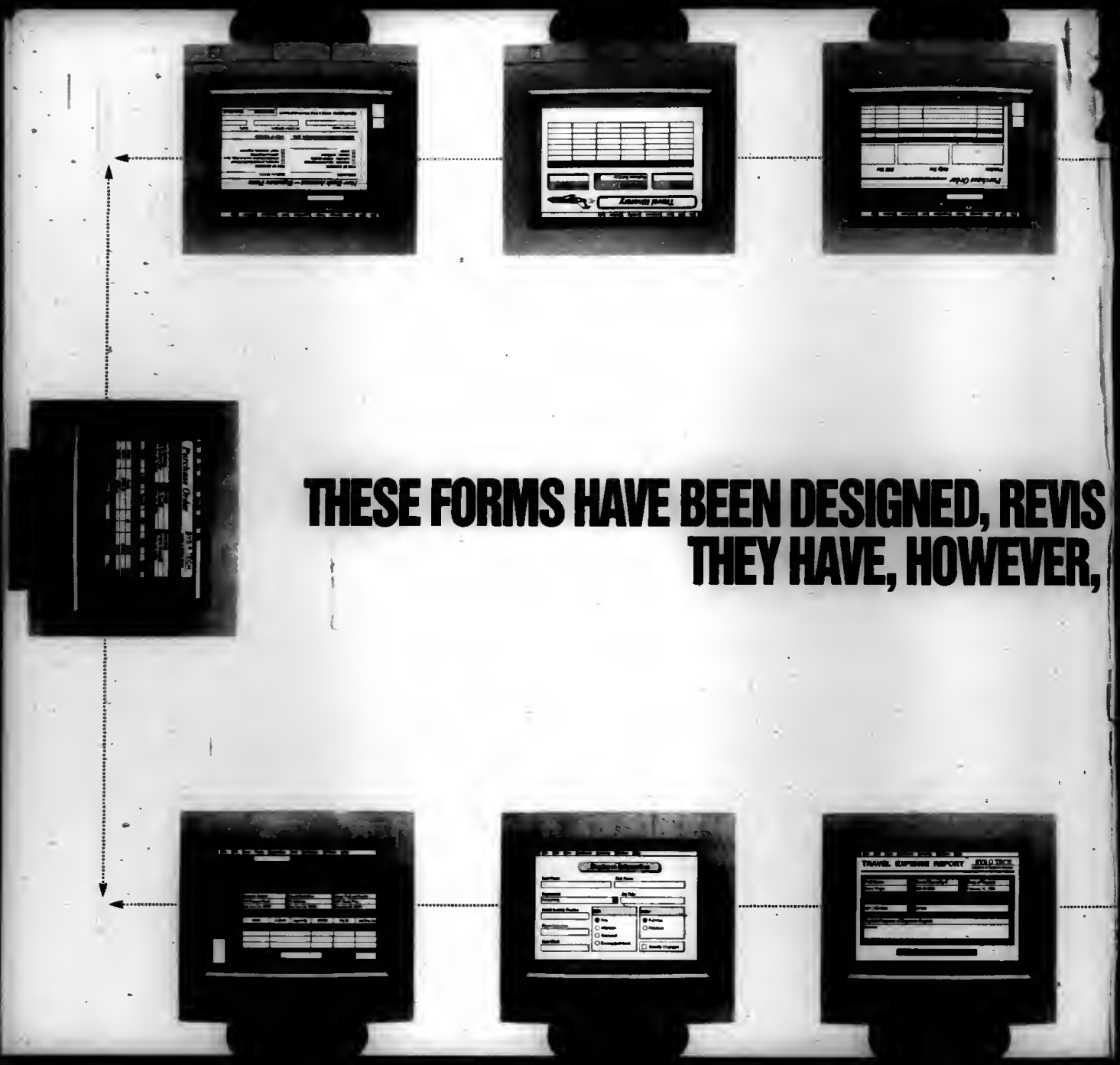
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Lotus woos DOS user base

CONTINUED FROM PAGE 39

antomotive paints unit of Sherwin Williams Co. in Chicago.

But while Lotus has made headway with the introduction of a viable Windows offering, both Microsoft and Borland are readying return volleys for this fall.

"Lotus has made some improvemeots, but their time in the sun will be relatively brief," promised Lewis Levin, general manager at Microsoft's Excel business unit.

Lotus roadblocks

Specifically, Microsoft is working on Version 5.0 of Excel for delivery this fall. Among Excel 5.0's most notable new features will be support for Version 2.0 of Microsoft's Object Linking and Embedding (OLE) facility. This facility, which will be added to all Microsoft applications in the next t8 months, will allow applications to share data in a highly transparent fashion.

In addition, Microsoft plans to deliver a common macro language and similar user interfaces across all its applications.

"The future is going to be about coosistency and integration. The feature wars are over," said Robbie Bach, Microsoft group prodoct marketing manager for Excel.

In the meantime, Borland has announced that it will deliver Versioo 2.0 of Quattro Pro for Windows this fall. It will include a oumber of wizards designed to automate tasks such as version management, expanded Help facilities and a oew graphing otility.

"I can't say any of the spreadsheets for Windows packages really shine above the others, but t-2-3 users won't be disappointed by the new offering," said Daniel Gasteiger, editor of "The Spreadsheet Consultant" newsletter in Cambridge, Mass.

'What-if' advantage

However, the depth of the version management control in 1-2-3 may give Lotus one long-term feature advantage over its rivals to workgroup environments. in additioo to tracking spreadsheet files, the lastest version of Lotus' t-2-3 allows users to create 'what-if scenarios across ranges and cells in the same spreadsheet.

"With Version Manager, Lotus really raised the bar compared with the Scenario Manager facility in Excel," Gasteiger said.

Bach countered that the versioo managing feature is too restrictive for most sites.

As a result, while Lotus has made significant strides in the Windows market, the damage caused by oot having an offering until Release 4 that truly takes advantage of the Windows environment may prove difficult to reverse.

"We have t6 PCs in our group and nine of them oow use Excel. We switched because the main problem we had was making graphs, which are a lot easier to do using wizards in Excel," said Dwayne Byrom, technologist at Halliburton Services, an oil field maintenance service provider in Duncan, Okla.

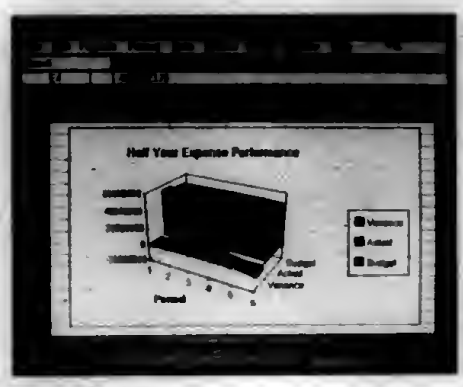
Now, Byrom said, his company has a package deal for suites in place that would make it difficult to switch back to 1-2-3.

"The one thing Lotus doesn't have is the strong counter to suites. Microsoft can leverage Microsoft Word sales, while Lotus' Ami Pro doesn't have a lot of market share," ooted Chris LeToeq, an industry analyst at Computer intelligence/Infocorp.

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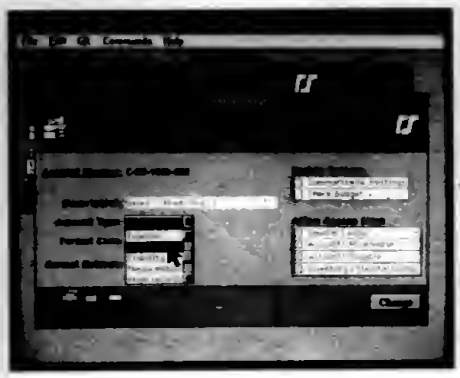
The buying decision

When Avis went looking for the client portion of its client/server system, the company weighed the Apple Macintosh against platforms such as Unix, Microsoft Corp.'s Windows and IBM's OS/2.

Peter R. Tittler, Avis' vice president of networks and technology, said the Macintosh proved itself most cost-effective in terms of hardware and software. Also, with Avis' three years of Macintosh experience, Tittler said he felt it was a more "stable environment" than some of the others.

Performance gave the Sybase RDBMS the win over databases from Oracle Corp. and The ASK Group, Inc.'s Ingres Products Division, he said.

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ROSS SYSTEMS

Avis saves time

CONTINUED FROM PAGE 39

such as the insurance data — may be needed next.

Reduction in reservations processing time is key in the competitive car rental industry. According to Tittler, customers will not bother waiting for a reservation if they think they can receive faster service from a competitor such as Hertz Corp., National Car Rental Systems, Inc. or Alamo Rent-A-Car, Inc. "The key is consistent service wherever customers may be," Tittler said.

By reducing the amount of time spent preparing reservations with customers over the phone, Avis anticipates improved customer satisfaction and a hefty $1 million annual savings in phone bills, Tittler said.

Mainframe migration

Avis expects TAFT to eventually reduce its reliance on its IBM mainframes. Tittler said Avis hopes to migrate its IBM DB2 rate database from the 3090 mainframe to the client/server environment by sometime in 1994.

Because Avis is employee-owned, there was a great deal of input from reservations agents on the GUIs that were developed for TAFT Macintoshes, Teubner said.

By the end of this month, 700 Macintosh PCs and workstations will be TAFT-enabled.

The GUI-based systems have provided other benefits. For example, when Avis needed to train a new reservations agent to process reservations using the 3270 terminals in the past, the training period averaged six weeks. In contrast, the training period for new agents on the GUI-equipped Macintosh PCs has been pared to three weeks. "The GUI front ends for agents have added value," Teubner said.

Application packages

Lucas Management Systems has introduced Artemis Schedule Publisher 4.1L project management software.

The product supports fully automated resource scheduling and multiproject analysis. It offers real-time calculation of schedules, resources and costs. Graphics reporting capabilities are included, and an embedded drawing module offers more than 100 report formats. A graphical tool bar has been added.

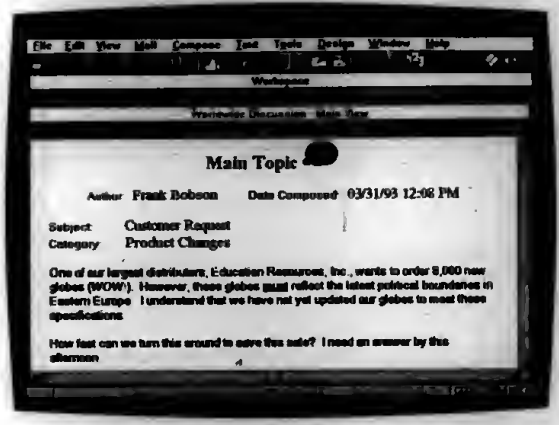
Artemis Schedule Publisher operates in a Microsoft Corp. Windows environment. However, it will also be available in an Apple Computer, Inc. Macintosh version in the future.

The product costs $1,995 per copy.

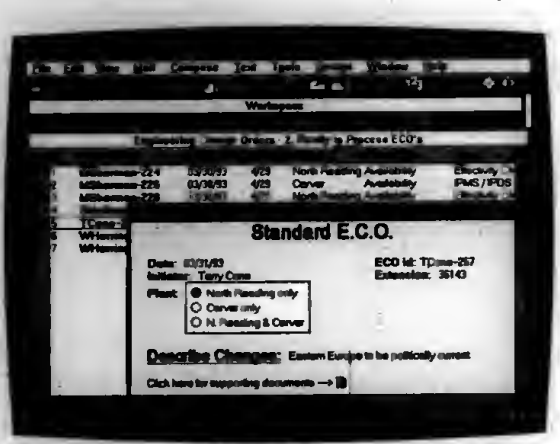
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1. This is James' Notes desktop. He uses it to access information and work quickly with people in all departments to solve problems world-wide. James clicks on the Worldwide Discussion application to catch up with important company news. The SmartIcons across the top make it even easier to work in Notes.


Main Topic
Author Frank Bobson
Date Composed 03/31/93 12:06 PM
Subject Customer Request
Category Product Changes
One of our largest distributors, Education Resources, Inc., wants to order 8,000 new globes (WOW!). However, these globes must reflect the latest political boundaries in Eastern Europe. I understand that we have not yet updated our globes to meet these specifications.
How fast can we turn this around to save this sale? I need an answer by this afternoon.

2. The field rep in Texas is working on a request from a customer. But to make the sale, the product, in this case a globe, has to be changed to reflect the most up-to-date countries and borders. And evidently time is critical. The competition must already be in there pitching.



5. Once he has the information, he clicks on the Engineering Change Order application to request specific product changes from the plant in North Reading. He links the supporting Newswire information to the E.C.O. It will be easily viewed with a single click of a button.



6. After lunch he opens a document from Ellen, in product development, who has responded with the necessary changes, and scheduling information. The new art was scanned directly through Lotus Notes: Document Imaging from the art department. James approves the art for manufacturing.

How Lotus Notes Relea

Thousands of companies already know how Lotus Notes helps them respond more quickly and effectively to the demands of everyday business. Now Release 3 extends that power to new dimensions.

Just watch how James Carlton, a new district manager at Global Publishing, uses Notes Release 3 to solve a major global problem in short order. See how he uses information from on-site and remote locations. From both inside the company and external sources. Across a



variety of platforms. How he uses applications such as Account Tracking, Newswire, and Engineering Change Orders to get a new product developed fast. And how he creates an informal team spanning a range of departments to do it.

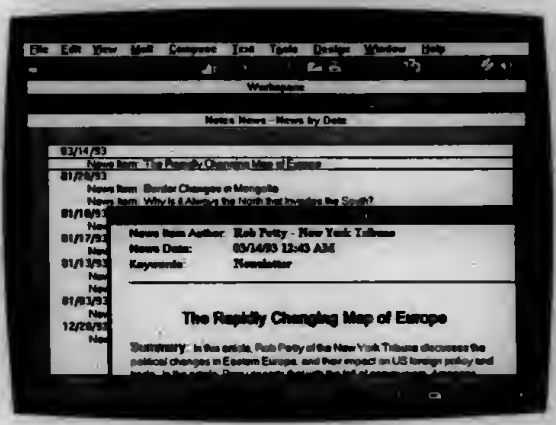
With the new Release 3, Lotus® Notes now supports all the leading GUI platforms: Windows;™ OS/2;® UNIX;™* even Macintosh.®

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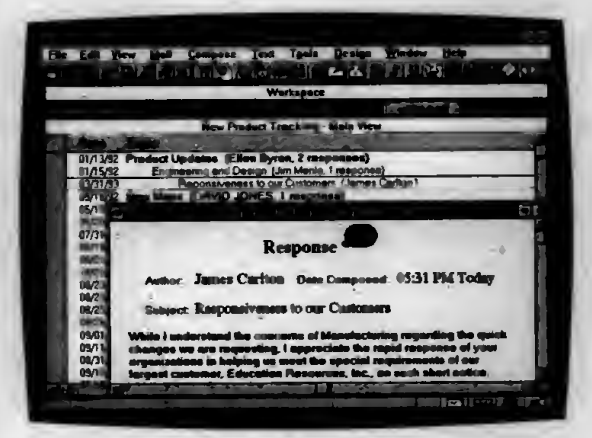
*UNIX Server and Client available by year end 1993. In Canada, call 1-800-GO-LOTUS. ©1993 Lotus Development Corporation, 55 Cambridge Parkway, Cambridge, MA 02142. All rights reserved. Lotus, Lotus Notes and 1-2-3 are registered



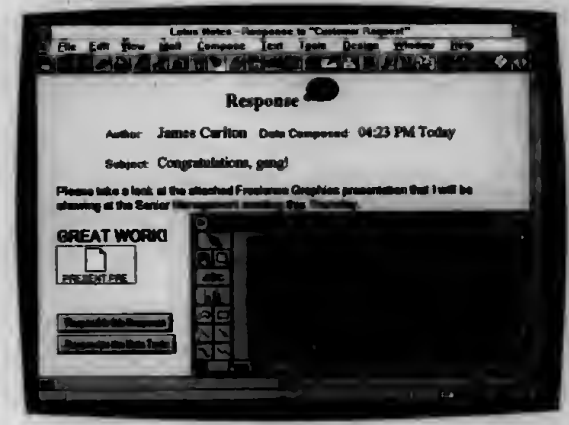
3. He clicks on the Customer Tracking application to learn more about this customer. The profile includes an attached 1-2-3® spreadsheet. He double clicks the icon to open the spreadsheet and finds that Education Resources is a very large customer that pays its bills.


Workspace
News Item Author: Rob Petty - New York Tribune
News Date: 03/14/93 12:43 AM
Keywords: Newsletter
The Rapidly Changing Map of Europe

4. James' next step is to click on the Newswire database for the most up-to-date report on precisely what geographical changes will have to be made on the new globe. And just how extensive they'll be.


Workspace
New Product Tracking - Main View
Response
Author: James Carlton Date Composed: 05:31 PM Today
Subject: Responsiveness to our Customers

7. On the Product Tracking application, all departments involved have confirmed that they can meet the schedule. However, they've cautioned James to be careful about rushing schedules in the future. James uses the Discussion database to acknowledge their comments and thank them for their efforts.



8. Wanting to record and promote the team's accomplishments, James puts together a presentation for senior management in Freelance Graphics. Then he posts the presentation in the Presentation database so everyone can see how the team rearranged the world to save a big account.

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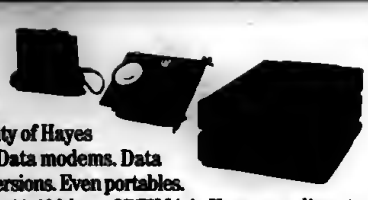
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New systems, new business practices

Some users find one requires the other when they go client/server

By Kim S. Nash

"A few hair-raisers [and] a lotta sweat" is how Greg Reynolds describes his department's move to client/server computing.

Reynolds, manager of human resource development at Eli Lilly and Co., led a group of roughly 30 information systems workers through 2½ years of "all sorts of surprises" that resulted, in September 1992, in a 15,000-employee payroll system that runs faster and eats up fewer IS resources than the homegrown host-terminal setup it replaced, he said.

He advised would-be followers of the client/server path to beware the duality of distributed systems: Not only must you install and manage networked PCs and other sometimes foreign technologies, but your firm must also frequently overhaul business practices to wring benefits from client/server systems.

If he had his druthers, Reynolds said, he would not have tried to make both big leaps at once. "Too many changes to deal with. It was *tough*," he said. Eli Lilly moved payroll for 15,000 U.S. employees and 8,000 retirees to PeopleSoft, Inc.'s client/server HRMS system on a wide-area network of 300 Intel Corp. 1486-based IBM Personal System/2s accessing a DB2 database. "Some of my own colleagues told me I was crazy," Reynolds said, "but the risk we took has been rewarded."

Use shrink-wrapped software

Reynolds and others who have taken the client/server leap of faith advise the uninitiated to try the move in a small or medium-size project using off-the-shelf programs. Today, that means either human resources or certain accounting systems because these are virtually the only major packages now on the market.

To be sure, some users have succeeded in building client/server systems using tools such as Powersoft Corp.'s PowerBuilder or Gupta Corp.'s SQL Series. However, starting with a packaged application "is one less worry" for beginners, according to Larry Miller, IS manager at Owens-Corning Fiberglas Corp.

The Toledo, Ohio-based firm sought client/server packages for areas where in-house staff lacked expertise, Miller said. Owens-Corning went live with a distributed payroll/human resources system for 4,000 corporate employees last year. The company is expanding the application to North American regional offices to serve 22,000 workers.

"We couldn't build applications of this magnitude," Miller said. He added that he could not justify the effort of building such systems when they are available as near-commodity items.

Stranded at sea

But users said they still need help, even implementing off-the-shelf applications. Lack of guidance is one trouble spot. Questions loom about nitty-gritty issues such as version control and managing companywide application updates. "No one tells you how to build that stuff in," said David Callingham, partner at CGI Group, Inc., a consulting firm in Toronto.

Eli Lilly, for example, wanted to jump-start its project with outside consultants, but none had PeopleSoft know-how, Reynolds said.

Help is available from vendors for a fee, noted David Cameron, vice president of IS at The Wackenhut Corp. The Coral Gables, Fla.-based conglomerate called on Dun & Bradstreet Software consultants last year to smooth rough spots in installing SmartStream, client/server decision support products from D&B Software.

SmartStream was designed to yank data from mainframes for workstation or PC users. The product will connect to D&B Software's forthcoming financial modules, due out next month, the company said.

Wackenhut is a big D&B Software user, dating back to premerger Management Science America, Inc. days. Always a solid mainframe shop, the company now wants to "move almost everything" to five Hewlett-Packard Co. HP 9000 Unix servers in 18 months to two years, Cameron said. "We're using SmartStream to train IS on what client/server is all about," he explained.

Interim step

Other users are less aggressive. Jay Graydon, vice president of finance at Shedoike McMaster Hospital in Hamilton, Ontario, has been experimenting with SmartStream for several months on a Digital Equipment Corp. VAX connected to six users on generic 486-based PCs. The SmartStream project is separate from the hospital's primary equipment.

"This is an interim step for us. We have to see what kind of added functionality we get before expanding," Graydon said.

Although most users declined to talk about the cost of client/server applications, they agreed that it is not cheap. Many decisions are involved, including operating system and database server platforms. Plus, concerns abound that systems management tools common for minicomputers and mainframes are not yet available for client/server environments.

Large system companies have had years to work through the various permutations of systems, while client/server is just getting started, said Bob Johnson, an analyst at Dataquest, Inc. "When you're dealing with your distributed computing environment, that highway can't have a lot of potholes in it. If it does, you are going to be out of business," Johnson said.



Client/server promises abound, including the following:

- More flexibility by enabling end users to do for themselves tasks that IS typically performs, such as report writing.
- Potential savings in operations and other costs by using smaller hardware and fewer IS staffers.
- A business edge over rivals that comes from freeing IS staff to work creatively.

Would-be client/server users face tough decisions: Windows NT, Unix, NetWare or OS/2? Buy or build applications? Which administration tools? "There's so much noise out there now, with no one controlling the volume," said CGI Group's David Callingham.

Financial products

The following is a sampling of what is coming down the pike in client/server financial applications:

- D&B Software and PeopleSoft plan to fill out their client/server product lines with accounting modules next month, including general ledger and accounts receivable and payable pieces.
- IMRS, Inc. plans to break into this arena with products inherited via its February acquisition of MAI Systems [CW, April 19]. However, the products will lack Windows support — key to many users' client/server plans — until early 1994, the company said.
- Ross Systems, Inc.'s Renaissance/CS line of financial applications is due for a kick next month, with a Microsoft Windows-based client portion of a Unix-based distributed system introduced in January, according to Larry Smart, president.
- Walker Interactive Systems plans to release seven finance packages for HP's HP/UX, IBM's OS/2, Windows and the Open Software Foundation's Motif by the fourth quarter. A spokesman said the products will be priced comparable to Walker's mainframe products, which range from $150,000 to $400,000 per package, depending on platform and number of users.



David Coursey

Checking out PowerPC

To PowerPC or not to PowerPC, that — with apologies to the "other" Bill — is the question. Is it nobler to follow the Pied Piper of Intel to chart a RISC-y course to a new destination?

OK, so I made a mess of literature, but I've been up late the last couple of nights worrying about the PowerPC so you don't have to. Not that many of you have been burning the midnight oil over this one. Most people know just enough about the PowerPC to know they probably don't want one. That is a shame because the Motorola/IBM microprocessor family could become important. First, the upside.

- The first PowerPC, the 601, is sampling now and will appear in machines before the end of the year. In terms of processing power, think of the 601 as a Pentium with a math coprocessor attached. Integer performance, in native mode applications, is about the same as Pentium, but the 601 moves ahead in floating-point calculations, just like an 80X86 with a coprocessor.

The PowerPC is also promised to be available in large quantities, cost much less than Pentium and not require a new air-conditioning system to drain Pentium-generated heat out of your building. By comparison, the Pentium should cost more than twice as much and is promised to only limited quantities, perhaps 200,000 in the first year. Apple, meanwhile, plans to sell 1 million PowerPC machines in the first year.

- Speaking of Apple, the PowerPC is the processor for the next generation of midrange and high-end Macintoshes. The Motorola 68000 series will remain in the product line, at least for now, but Apple plans to move aggressively into

Coursey, *page 64*

Novell beefs up customer support options

Vendor identifies NetWare experts with new certification process

By Michele Dostert
PROVO, UTAH

In an effort to respond to complaints about end-user support at the reseller level, Novell, Inc. has announced a program to identify resellers, dealers and systems integrators with demonstrated NetWare support expertise.

Novell said the program is a response to customer demands for better NetWare support from the reseller channel.

"Our customers are telling us that they can't get competent support from their reseller," said Richard King, Novell's vice president of service and support. "We get thousands of calls every month from users looking for a referral to a new support provider."

User complaints about reseller support include poor response times, limited access to hands-on experts, lack of on-site support and receiving outdated information about new patches and revisions.

Common complaint

The complaint cited most often was reseller inexperience with multivendor, local-area network-to-host environments.

"We bought our NetWare from our local Computerland, and the one guy there who really knows his stuff is always swamped," said Paulette Hamilton, a LAN administrator at National Health Laboratories in La Jolla, Calif. "So we either struggle with it ourselves or wait for Novell support to get back to us from their 800 line."

Weeding out

To ensure the best possible service and support available, members of Novell's Authorized Service Center program must meet a number of requirements:

- Staff with technical proficiency.
- Ability to respond to customer's need for a specific service.
- Defined response time.
- A support lab.
- Ability to deliver on-site support.

Source: Novell, Inc.

Hamilton added that she would be especially interested in a referral to a support center with expertise in NetWare/Systems Application Architecture integration.

Toll-free referrals

Support providers that meet Novell's requirements will be certified as Novell Authorized Service Centers (NASC) and receive customer referrals from Novell. Novell said that certification is currently under way, with the toll-free NASC referral program scheduled to be up and running by June 15.

In addition to resellers, Novell expects to certify independent support providers such as TRW/Computerland Corp. and JWP, Inc., as well as support organizations owned by vendors such as Hewlett-Packard Co. and Digital Equipment Corp.

To become authorized, organizations must have at least two certified NetWare engineers (three will be required by the fall), at least one enterprise certified NetWare engineer (CNE), a defined response time, a support lab, on-site support within a 50-mile radius and hot-line support, among other requirements.

Novell said it expects 80% to 90% of its 536 Platinum resellers, which are already required to have at least two CNEs on staff, to join the NASC program.

The NASC program is the latest of several Novell support initiatives, including a technical support alliance between Novell and third-party hardware and software vendors such as Compaq Computer Corp. and Microsoft Corp., the formation of Novell Consulting Services and the introduction of its Master License program for very large customers, which includes direct Novell support.

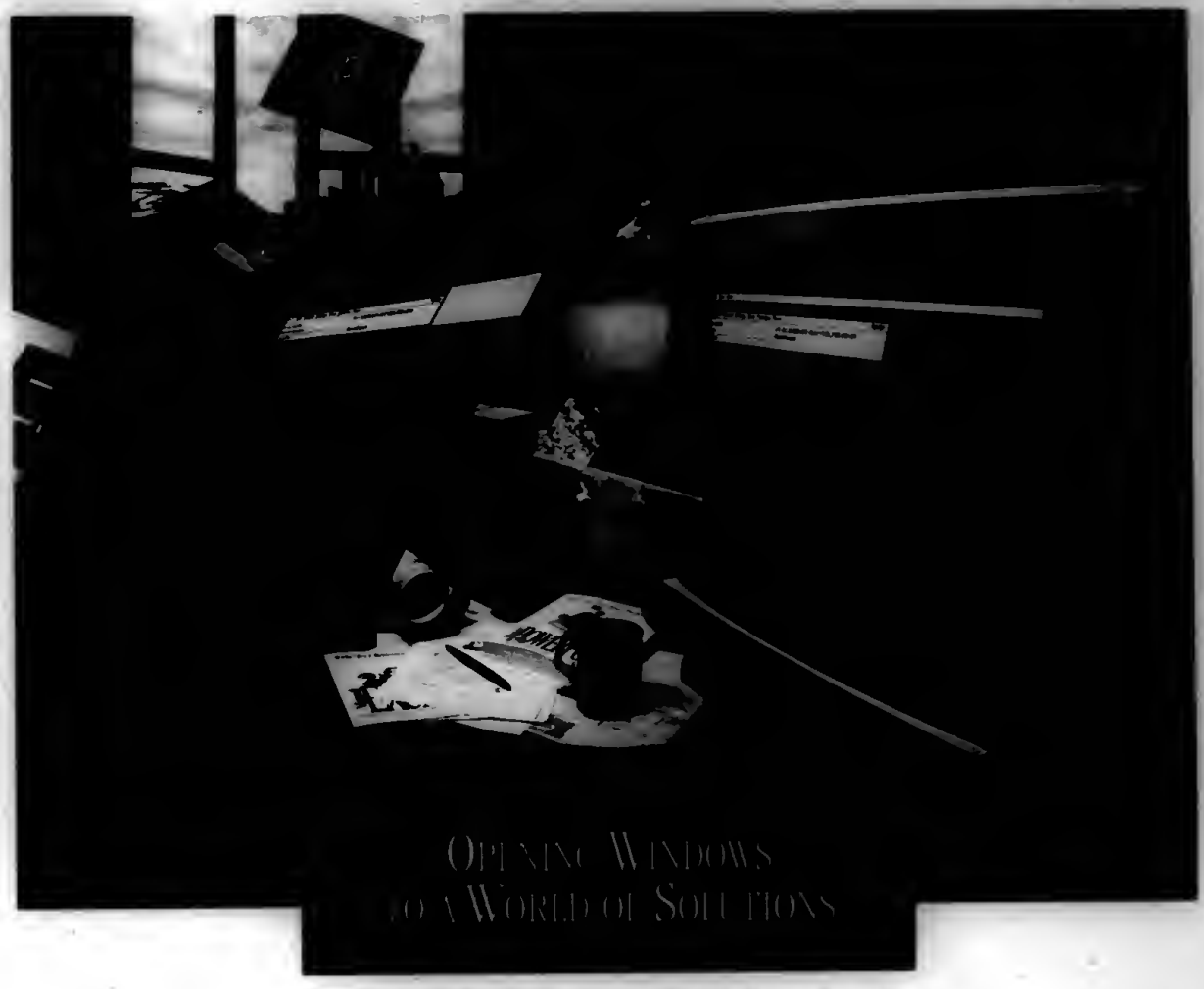
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In the world of Windows NT, Intergraph's applications bring a new level of power and sophistication to the technical desktop.

Olé OLE

Integrate CAD processing with other Windows applications such as Word and Excel by taking advantage of complete support for Microsoft's Object Linking and Embedding OLE technology

The computer graphics industry has made another leap forward. Under Microsoft's New Technology operating system, popular business programs and Intergraph's technical applications can run alongside each other on the same computer. The same friendly Windows environment appears throughout the applications – word processing, spreadsheets, architecture, civil engineering, mapping, and all the rest. CAD users can now spend time designing and drafting, not navigating through the operating system.

New technology, new opportunities.

The arrival of a powerful new Windows operating environment means that for the first time, hundreds of thousands of microCAD users will have access to the functionality and technical sophistication of Intergraph applications.

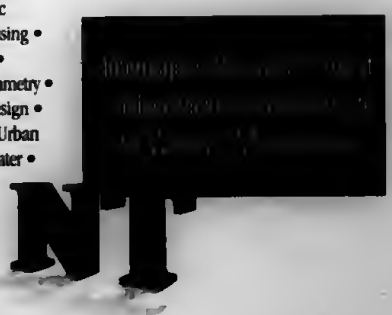
Technical leadership.

The list of disciplines addressed with Intergraph software is one of the longest in the industry – and continues to grow.

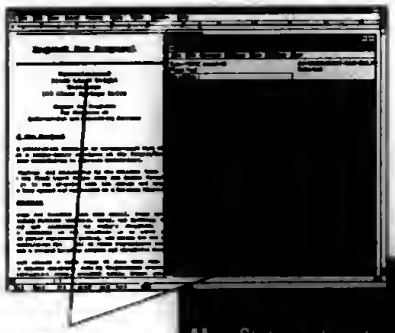
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"The Microsoft-Intergraph alliance provides a full range of technical applications, as well as a wealth of personal productivity tools – complete solutions for the technical desktop."

Paul Maritz, Microsoft
Senior Vice President of Systems



MicroStation is general-purpose CAD software that runs on PCs, Macs, and UNIX workstations. It is a primary tool in Intergraph's solutions for the technical desktop. If you appreciate the economy of PCs but need sophisticated design power, take a look at MicroStation. It means a more productive, more profitable future for you and your company.



CAD should give you the productivity edge you need to be competitive in today's business environment. You need a tool that streamlines the process of drafting, as well as a modeler that helps you create virtually any object – fast. You should be able to store design data in relational databases without programming. Your future depends on the ability to share data with your design team and other operations. MicroStation software gives its users this level of proficiency. And keeps them in tune with the best in applications solutions.

"MicroStation includes a robust set of 3D capabilities and gives you a variety of ways to render models."
Infoworld

Intergraph introduces MicroStation Version 5. It brings renowned integration advantages to designers and engineers who need to run in the Microsoft Windows business environment – Windows, Windows for Workgroups, and Windows NT.

Software that puts you in charge.

Today, *user friendly* means more than easy – it means software that empowers you. You control MicroStation through a graphical command center featuring icon command buttons ... pull-down menus ... tear-away palettes ... multiple, resizable overlapping views. The display is sleek. With no perceptible repaint, Version 5's graphical user interface seems to float over your drafting and design area.

MicroStation runs as an extension of the way you work. Choose from unique *Workspaces* designed for your profession. They configure the graphical CAD desktop for you and manage the computing environment to your needs. Even discipline-specific drafting *styles* are provided. And it's all tailorable: Graphically build your own pull-down menus and palettes. Rearrange fields in dialog boxes. Disengage commands. You've got the power to create the interface that best meets the needs of the task at hand.

CAD software should accommodate the way you think, work, learn – even change your mind. You should be able to select a different dimensioning system right in the middle of a command. Or modify a shape and have all of the dimensions automatically change. Simple actions – like grabbing a line or object – should be so fast that they require no conscious effort. MicroStation performs functions like these as a matter of course. Other CAD software simply can't.

A powerhouse of features gives you the productivity edge!

MicroStation offers more functionality in one package than any other CAD software. New *dimension-driven design* options help you design intelligently using geometric and dimensional constraints. Apply variables to the constraints and save your design for reuse with different parameters when creating similar objects or parts. These and more new capabilities – like user-defined linestyles and associative patterning and hatching – provide the most complete drafting environment available.

Powerful tools help you create freeform, mathematically precise surface models. Model virtually any object, no matter how complex. Perform trim, blend, fillet, and Boolean operations between surfaces. You've got the simplicity of solid modeling without the overhead.

Visualizing your designs is easy and cost-effective with MicroStation's new photorealistic rendering capabilities. Light sources, shadows, transparencies, depth cueing, anti-aliasing, and bump and pattern mapping help you market your designs. You can even create flythrough animations and play them onscreen for your clients. MicroStation is a powerhouse of features in one package.

The best tool for the '90s production environment.

Users value the way MicroStation performs in the production environment. On large projects, it's a clean-running, fast performer. One user said, "MicroStation is an all-encompassing system ... capable of covering all facets of project management, not just design and drafting."

MicroStation users enhance productivity through real-time data sharing. True file referencing allows each member of a workgroup to easily and safely share files concurrently with others. It's peer-to-peer sharing of design information while everyone continues working – across multiple hardware platforms and networks.

Run MicroStation with other Windows applications. Cut and paste graphics in a Word proposal. Link document text with your MicroStation design file. Drive MicroStation graphics with an Excel spreadsheet. Embed sounds and messages in your design file. All in all, if you combine MicroStation's integration capabilities with Windows' data sharing capabilities, you've got just what you'd expect from a '90s CAD product. And you have a clear growth path to Intergraph's sophisticated application solutions for UNIX and Windows NT.



PC MAGAZINE EDITORS' CHOICE
February 23, 1993
MicroStation PC, 4.0.3

"MicroStation PC is an exceptionally usable, powerful package with such rare and exotic features as non-uniform rational B-splines."
PC Magazine

MicroStation



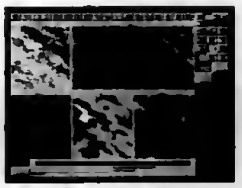
"Compared to DataCAD, AutoCAD, and VersaCAD, MicroStation is much faster ..."
Computer-Aided Engineering

In some industries, 25 years is not much. In computer graphics, 25 years is the lifetime of the industry. For a quarter of a century, Intergraph has developed computer graphics systems – hardware, software, and support – for industries that rely heavily on maps, engineering drawings, and models to convey information.

Intergraph users range from small offices or departments to large multinational firms, and their projects run the gamut from single drawings to complex aircraft carriers.

Climb the Statue of Liberty, ride Swiss Rail through the Alps, use the 1993 Rand McNally Road Atlas, or take a break with the world's most popular soft drink. In these unexpected places – and hundreds of others – you'll find the results of combining Intergraph's computer graphics experience with users' ingenuity.

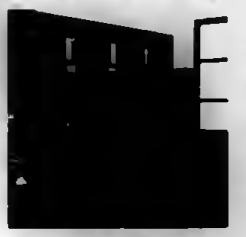
With Intergraph's MGE geographic information system, California's Division of Mines and Geology will provide digital maps to enable Californians to determine if they live in risky earthquake or landslide zones



Low-cost suite of AEC applications

Feature-packed and available at a low cost, Intergraph's MasterWorks applications for architects and civil engineers bring a new level of power and value to the technical desktop. Intergraph brings to the Windows world functions formerly available only in high-end CAD systems. The MasterWorks series includes these applications:

RoadWorks for transportation engineering
DesignWorks for architectural design
CogoWorks for coordinate geometry
FrameWorks for structural modeling
SiteWorks for site design



Gobbell Hays Partners Inc., a 32-person firm, uses MicroStation and ModelView from Intergraph to design laboratories for corporations and universities.

Affordable, expandable geographic information systems (GIS)

With the Modular GIS Environment (MGE) solutions for the PC, Intergraph gives you the best of both worlds – the power of the world's leading GIS on the world's most popular computing platform. Using MGE PC solutions, you can build an integrated, powerful GIS without investing large amounts of time, money, or resources. Start with a single PC and add workstations and sophisticated software as your needs grow. Or expand your existing MGE network with cost-effective PC seats. MGE PC solutions include:



In 39 of the 50 departments of transportation in the United States, Intergraph applications for surveying, civil engineering, and GIS enable the DOTs to design and maintain the nation's transportation infrastructure.

MGE PC-1 for
database creation and project management
MGE Grid Analyst PC for
spatial modeling and analysis
MapInfo for Windows for
desktop thematic mapping
MGE Project Viewer for
read-only database display and query

Designed for Windows NT – the new Technical Desktop Series workstations.

Intergraph has traditionally supplied complete software and hardware solutions. In keeping with this tradition, Intergraph offers its own systems designed for Windows NT. They're optimized for CAD immediately out of the box, with full networking capabilities built in. With an Intergraph workstation, display clarity, high resolution, and graphics performance make viewing your work a pleasure.

These fast, affordable systems are perfect for running the new technical applications from Intergraph, along with thousands of other applications that run under Windows. And workstations in the Technical Desktop Series are fully interoperable with other systems on your network.



Innovative technology – once the domain of high-end systems – is now available on the technical desktop. For a more productive future, this is what you need . . .

Workgroup integration.

Intergraph pioneered reference files, the technology that enables each member of a workgroup to easily share designs with others. And, since .dwg files can also be referenced, you can work with AutoCAD-created data in MicroStation. In the Intergraph distributed computing environment, you share information, printers, plotters, and storage devices – and see dramatic savings in time and money.

Integrated applications.

Intergraph's integrated data management architecture provides access to technical information within applications and across disciplines. This means that Intergraph's applications can address an entire project workflow from end to end. Access to information across disciplines is made even easier by the fact that all applications feature the same easy-to-learn-and-use graphical user interface.

Smooth operation between operating systems.

Many of Intergraph's customers operate on networks that include a mixture of workstations and PCs, so interoperability is essential. Because Intergraph application file formats are common across hardware platforms, there are no problems of data incompatibility or translation, and sharing data is easy. Also, basic Windows NT includes all the tools needed for TCP/IP communication with our UNIX-based systems, so users can mix UNIX-based and Windows NT-based workstations in their networks and enjoy smooth interoperability.

Relational database support.

Intergraph data management tools have built-in interfaces to Oracle, Informix, and other database management products. Support of leading databases in multiple environments lets you create links to them without programming.

Growth path.

If you choose to upgrade your hardware or add other high-end technical applications, Intergraph gives you a growth path. You can upgrade your system and continue to share files.

Open systems and industry standards.

Your investment in hardware and software is protected by Intergraph's continuing support of major standards for computing, networking, drafting, and design.

Value-added services.

Intergraph also provides support in the form of project implementation, customization, systems integration, training, and worldwide service and maintenance.

Call 800-345-4856 for an Intergraph representative in your area.

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INTERGRAPH
Solutions for the Technical Desktop

Coursey

CONTINUED FROM PAGE 49

PowerPC, even at the risk of confusing customers while the transition takes place.

This is a must move for Apple, which has already announced plans for several PowerPC machines and has more than a dozen developers lined up to write native-mode applications.

This is important because without specially written applications, PowerPC, like Pentium, really doesn't shine. One of the issues for Apple, however, is the confusion this creates in the marketplace.

Apple isn't saying when the new boxes will come out beyond "the first half of 1994," but at some point smart customers are going to stop buying 68000-based machines and wait Apple out.

•IBM is committed to PowerPC as well, though not to the same level as Apple. IBM hasn't been real specific, although it's easy to predict RS/6000 type machines built around the new architecture. There could even be a portable or two, especially in 1994, when next-generation PowerPC chips begin to appear.

This will be interesting because the second-generation PowerPCs, the 620 and 603 (there is no 602) may be in machines about the time Intel finally gets the Pentium into mass production. That would give the PowerPC camp big advantages in both performance and price.

Besides IBM, Sun and several Unix vendors — though notably not The Santa Cruz Operation — have committed to developing for PowerPC, giving the chip instant authority in the Unix camp. The PowerPC could also be a threat to AT&T's Hobbit processor, used in the EO devices, and perhaps to other personal digital assistant architectures.

•On the downside, Microsoft hasn't made any big public pronouncements but is quietly saying it won't support the PowerPC short of being dragged into doing a port of Windows NT. This reflects both the commitments Microsoft has already made to DEC's Alpha and the Mips R-4000 processors as well as its relationship with Intel and antipathy toward Apple, Motorola and IBM.

The lack of Microsoft support is probably the single most important mark against PowerPC and offsets most of the positives, at least where the bulk of the market is concerned.

But you'd be smart to keep an eye open, especially where workstation and server strategy is concerned, because that's where the PowerPC with Unix and Apple could make a real play for corporate dollars. For price, performance and making a statement that we still believe in open architectures, the PowerPC looks like the way to go, even if we have to drag Microsoft along.

Coursey is editor of "P.C. Letter," a San Mateo, Calif., industry newsletter. His MCI Mail address is 558-4460.



Ethernet cards turn PCs into LAN hubs

By Lynda Radosevich

DEERFIELD BEACH, FLA.

Networking start-up Alta Research Corp. is shipping a new line of Ethernet cards that can convert a PC into a four- or six-port Ethernet hub. Up to four of these cards can be linked in the same PC using an internal cable (included) to create an inexpensive 24-port concentrator.

Called EtherRim, the cards are aimed at departmental local-area network users in networks of five to 10 workstations. One likely use is to wire PCs together in a "daisy chain" to avoid wiring each computer back to a wiring closet.

One card has four 10Base-T ports and one 10Base-2 backbone connector. Another has six 10Base-T ports. The cards can be installed in any PC with 8- or 16-bit XT/AT or Extended Industry Standard Architecture buses. They can turn an old XT into a 24-port concentrator for about $40 per port, said Fred Thiel, vice president of sales and marketing.

The cards do not include standard management facilities such as Simple Network Management Protocol, but they do include automatic partitioning and isolation. The cards are priced at $295 for a 10Base-T version and $315 for the 10Base-2 version.





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Windows NT

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DEC partnership ships group scheduling tool

By Lisa Davidson
MANTENO, ILL.

Digital Equipment Corp. and Powercore International, Inc. have started shipping Version 1.1 of Network Scheduler 3, a group scheduler designed to fully support DEC's TeamLinks Mail X.400 environments.

With Network Scheduler 3, users can create personal and group calendars with features such as 24-hour scheduling access, automatic search for conflict-free meeting times, dynamic conflict detection, printed graphical reports and user-defined viewing rights to personal calendars, according to the vendors.

Support is provided for various local-area networks and DEC's Pathworks network operating system. With DEC's TeamLinks, users have access to time management features for scheduling meetings between workgroups. Through DEC's Mailworks and TeamLinks Mail, the upgrade now supports wide-area message transport.

With this release, processing speeds for DOS users are said to have improved by 200% to 300%. When the product is running in DOS, it can perform tasks including copying, reconciling and sorting schedules faster than its predecessor.

The product is available in DOS and Microsoft Corp. Windows-based versions. For five users, the price is $395; for 25 users, $1,195; and for 100 users, $3,995.

Workgroup software applications

BBN Software Products has introduced BBN/Cornerstone, data analysis software for client/server computing.

The software integrates data access, statistical analysis, visualization and presentation of results. It is a graphical user interface-based product that consists of a base module with a data analysis framework, dynamic graphics, a work session capture mechanism and a broad data access capability.

A single-user fixed license costs $1,795, and a floater license costs $2,395.

▶*BBN Software Products*
150 Cambridge Park Drive
Cambridge, Mass. 02140
(617) 873-5000

Prism Solutions, Inc. has released Prism Warehouse Manager 2.0, software that converts operational applications and legacy data into integrated information that can be addressed in Unix or IBM's OS/2 client/server environments.

With the product, users can build an informational database or data warehouse to house a subject-oriented, historical base of information. The product extracts and integrates data, generates code and constructs a data warehouse.

It costs $75,000.

▶*Prism Solutions*
440 Oakmead Pkwy.
Sunnyvale, Calif. 94086
(408) 481-0240

Unix

Ampersand Corp. has announced the availability of MaTrix, a Unix-based complex instruction set computing (CICS)-compatible transaction processing environment, on Sun Microsystems, Inc.'s workstations and computers.

The product can be used for distributing production applications on Unix-based platforms and for off-platform development. MaTrix offers application development capabilities such as a screen-painting utility that generates CICS maps, a fully configurable source-code screen editor and a record editor to create, modify or delete records in the internal VSAM database.

The eight-user license costs $9,000.

▶*Ampersand*
Suite 205
327 W. Arden St.
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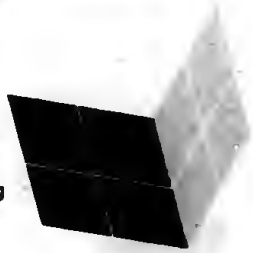
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Network holds sway on life, death

By Lynda Radosevich
SAN ANTONIO

If you are going to get hit by a truck, San Antonio could be the best place for it to happen.

Using the city's new dispatch system, emergency-call workers can save precious minutes by dispatching the closest emergency vehicles, taking into account daily traffic patterns. Drivers are assisted by detailed street guides printed from an up-to-date database. Once emergency vehicles reach the scene, emergency workers can quickly obtain medical records and other vital information from dispatchers.

This is made possible by San Antonio's new computer-assisted dispatch system (CADS). The system is the result of a two-year project to reconfigure the city's mainframe-based system and incrementally port it to Unix-based servers and PCs.

The network supporting CADS comprises two NCR Corp. 3450 multiprocessing servers in the police department building. One feeds emergency information to 50 Intel Corp. 80386-based PCs, and a second functions as a standby. The PCs, which are connected to the server by a Transmission Control Protocol/Internet Protocol network, are used by emergency-call takers and dispatchers.

ON SITE

City of San Antonio
Texas

Challenge: To improve speed and functionality of the city's emergency dispatch system.

Technology: NCR Unix-based servers; Intel 386 PCs; and Software AG Adabas host and client/server database software written in Natural language.

Results: Emergency vehicles arrive on accident scene 22.5% faster.

An Amdahl Corp. 5990 mainframe in a nearby building hosts the master copy of the CADS databases and updates the Unix servers every 30 minutes via a fiber-based Open Systems Interconnect network. The 5990 also processes other city applications such as payroll and property taxes.

Calls are sent directly from dispatchers at their PCs over a two-way, customer-owned Motorola, Inc. wireless network to police, fire and emergency workers equipped with notebook computers or smaller devices.

Additionally, to connect to 250 remote sites, such as a new job-training facility, the city is implementing frame-relay services from Southwestern Bell Telephone. "It's consistent, and we save about 20% over the point-to-point lines and get away from the hassle of modem connections," said Frank A. Stromboe, director of the City of San Antonio Department of Information Services.



Frank Stromboe: *New PCs have cut life-saving seconds off response time*

CADS updates the city's fire, police and medical dispatch capabilities in many ways. For instance, when an emergency call came in through the old system, the caller's address was displayed on a dedicated device and was rekeyed into a dispatch report displayed on a separate dumb terminal. Now, the workers have PCs with displays split into windows and can paste address and additional information automatically into the call report.

Stromboe said this process alone takes 30 seconds off the response time. When someone has a life-threatening injury that causes heavy bleeding, for example, 30 seconds "can mean the difference between life and death." In fact, the city can cite four instances where the faster response has saved lives.

Overall, Stromboe said, total response time from when a call is first received to when an emergency vehicle arrives on the scene has been reduced by 22.5%, from 6.7 minutes to 5.2 minutes. Without the new system, the city would have had to spend $15 million to add vehicles and human resources in order to achieve the same result, according to Stromboe. The city invested just $1 million in the CADS.

Network, *page 62*

James M. Connolly

E-mail gone awry



One of the great things about E-mail is that the lowliest peon in a company can send a message to the chairman.

Another great thing about E-mail is that the chairman can avoid reading that same message. All he must do is filter incoming E-mail, giving priority to messages that come from key assistants or deal with selected "important" topics.

Another great thing about E-mail is that an employee can send everyone on the staff detailed messages — complete with attachments — offering opinions about a topic that the recipients know nothing about and may not even care about. (Expect these messages on deadline days.)

The absolute greatest thing about E-mail? The Delete key.

With E-mail, we've created a monster where we wanted a gentle giant. We wanted the Jolly

Connolly, *page 60*

Data security

BT, CompuServe offer protection from hackers

By Joanie M. Wexler

Enhanced network service providers BT North America, Inc. and CompuServe, Inc. last week took steps to allay users' concerns about their data's vulnerability to hackers. The carriers implemented data network safeguards in the form of vendor-managed services or customer-managed site equipment that analysts said will likely appeal to customers with differing levels of network security savvy.



BT, for example, said it would assume complete management of customer databases and equipment for its security products portfolio, which includes access control and encryption from third-party vendors.

CompuServe said it will make available for customer sites an encryptor from Cray Communications for its frame-relay services that CompuServe will "ensure stays operational," said Robert McKinney, product manager for internetworking services.

"However, we think it's important for customers to maintain [sensitive] things like public keys themselves," he said.

"Customers truly concerned about security will likely conclude that they must manage their own passwords and databases," concurred Kenneth Bosomworth, director of research at International Resource Development, Inc., a consultancy in New Canaan, Conn.

"However, less sophisticated users will turn to carrier management to at least provide them with some level of security" — which is nonexistent on public packet networks today, Bosomworth said.

On the lookout

Security issues on users' minds include fear that an outsider will watch proprietary data as it is transmitted, such as formulas sent by drug companies or new car designs transmitted by automobile manufacturers, according to Michael Erickson, product manager for security products at BT.

A potential Achilles' heel is that "value-added" carriers such as BT and CompuServe use some lines from public telephone companies, such as AT&T, and "criminals have learned how to get into those central office switches for monitoring traffic," said Steve Matthews, BT manager of global network and business information security.

Bosomworth noted, however, that "for most companies, the biggest threat comes from their own employees, for which none of these measures is of the slightest use."

BT's managed security service suite combines safeguards offered by third-party vendors: access control by Security Dynamics in Cambridge, Mass., and key encryption by Technical Communications Corp. in Concord, Mass.

Security Dynamics' SecureID Card randomly generates a new six-digit code every 60 seconds. To gain access to a protected information resource, users would enter their fixed personal identification number plus the code that happens to appear on the credit card-size SecureID card at the moment.

As part of its security package, BT will also provide security consulting services. This includes attempts by BT to hack into a user's network resources to identify and fix vulnerabilities. The carrier will also send users electronic network activity reports to help them track unauthorized network use.

Generic APIs for messaging are on deck

By Lynda Radosevich

While messaging vendors such as Lotus Development Corp., Microsoft Corp. and Novell, Inc. each offer application programming interfaces (API) to their messaging systems, another group, the X.400 Applications Program Interface Association (XAPIA), is getting ready to roll out a generic set of basic APIs meant to span all messaging systems and hardware platforms [CW, Oct. 26, 1992].

Called Common Mail Calls, the APIs will help move electronic mail and mail-enabled applications across disparate software and hardware platforms and can replace vendors' proprietary APIs to ease development efforts. Microsoft, Lotus and Novell voiced support for the XAPIA's effort.

The first set of Common Mail Calls is expected to be introduced at Electronic Messaging '93, scheduled for June 14-17 in Atlanta. Additionally, the XAPIA announced that it will begin developing a new round of mail calls and invited interested vendor and end-user organizations to join the development effort.

For more information, contact Ed Owens, chairman, at (415) 335-6646 or Janie Chang, communications chairwoman, at (604) 436-2922.

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MAP/TOP update will incorporate worldwide protocols

By Elisabeth Horwitt

Proposed enhancements and changes to Manufacturing Automation Protocol/Technical and Office Protocol (MAP/TOP) 3.0 would incorporate several key national and international protocols into the standard.

Proposals for the 1993 release of Version 3.0 of the manufacturing and office networking standard include the following:

- Extensions to lower layer protocols to satisfy European user requirements.
- Inclusion of the International Standards Organization's X.500 directory services.
- Inclusion of the Intermediate System to Intermediate System routing algorithm for MAP/TOP networks.

The new MAP/TOP specification, which will embody user comments, is due out in August, according to the COS.

The document also proposes that the Corporation for Open Systems (COS) standards body accept the contents of the Industry/Government Open Systems Specification.

Two functional areas are excepted from this proposed acceptance: network management and directory services.

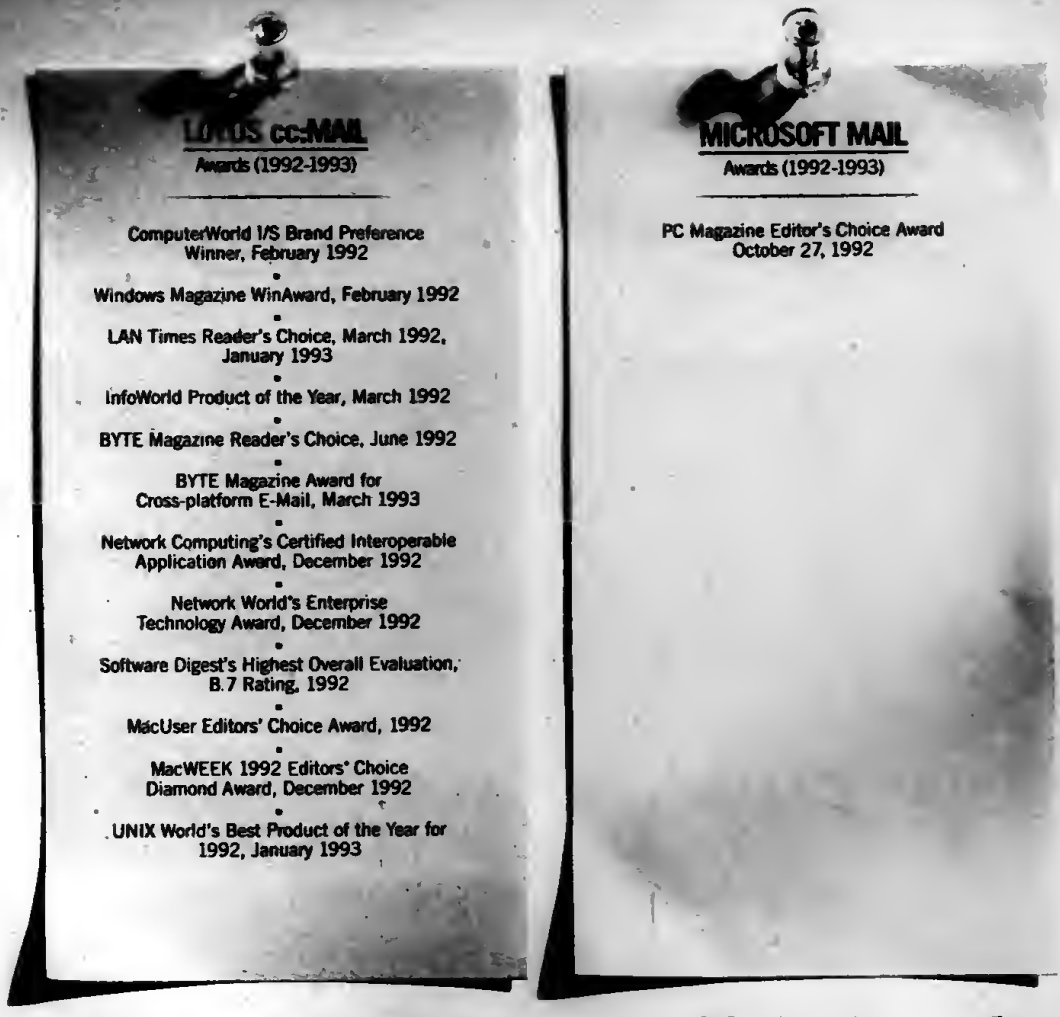
The enhancements are now being considered as a ballot by members of the North American MAP/TOP User Group, with comments due back by Friday.

The new MAP/TOP specification, which will embody the comments, is tentatively due out in August, according to a COS spokeswoman.

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Network Computing's Certified Interoperable Application Award, December 1992
Network World's Enterprise Technology Award, December 1992
Software Digest's Highest Overall Evaluation, B.7 Rating, 1992
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Connolly

CONTINUED FROM PAGE 57

Green Giant, carefully digging into the soil with his pinky to plant tons of vegetables and thus help feed the world. Too often E-mail is Godzilla. People send messages just because they can, and people ignore messages just because they can. My favorite excuse is: "The system must have eaten your message."

As much as I enjoy using E-mail to communicate with people within my company and on the outside, I know one thing: Nobody really knows how to use it, and that is why we have so many messages that are misread or not read at all.

I asked a bunch of IS managers and other users whether their companies teach users how to make proper use of E-mail. The typical response was something like, "Oh, yes. But it's easy — just point and click and type." The trouble is, those lessons deal only with the plumbing, not with the message.

Ask some people whether their company offers classes in how to write an E-mail message and the response is "Huh?" Actually, some don't even verbalize that one; they just get that familiar glassy-eyed look. But I guarantee every one of those people has been through an E-mail hell where they echoed Strother Martin's old line, "What we have he'ah is a failya to com-mun-i-cate."

Few in the corporate world realize written communication takes training. (Hey, I even went to college to learn this stuff.) Too many just type on a keyboard the words they would have said in person. You can be a great orator, but if you can't get to the point in a written message, nobody is going to read it.

And almost no one stops to think how differently the brain records the written word vs. the spoken word. The wrong word spoken over the phone or in person may be easily missed as you and your associate babble back and forth. The wrong word typed into an E-mail burns itself into the reader's memory. "Joe, you failed to send me those numbers. Please do so right away" can serve as a gentle reminder when spoken and is soon lost in the general din of the office. But, put that in a written message sitting under Joe's nose for five seconds or 20 minutes and it becomes "Joe, YOU FAILED."

If corporate America wants to get serious about written electronic communication, it must make sure that people know how to communicate rather than just send messages. Here are some suggestions:

Message musts

- Recognize chains of command and what spy-type folks call "need to know." Encourage everyone to send an E-mail to the chairman but only when the chairman is the appropriate recipient. "How about that ball game?" is not a message for the chairman. "There are serious morale problems in my business unit" may be just fine.

At the same time, there are people further down the food chain who shouldn't hear about problems they cannot solve and that don't relate to them.

- Don't use E-mail to avoid uncomfortable face-to-face communication, and don't use filtering or supposed system problems to dodge communication.
- Keep E-mail messages brief and targeted. You could even learn from the old-line newspaper approach of using a headline and a "who, what, where, when, why and how" type of opener to your message. If your subject line says, "Possible losses in second quarter," and your message starts with "Given the poor sales of our Whoseamathingies in Europe, we may lose $3 million," you can be darn sure people will read your message.
- Be careful how you say what you say. Remember that a poorly chosen printed word doesn't whip past the recipient at the speed of sound. It just simmers there on the screen.

One final note just to protect myself from the evils of the misinterpreted written word. That part about the chairman not reading E-mail from the peons was a generic reference to the corporate world at large, having nothing to do with personal experience. Honest, I'm sure the chairman of my company reads his E-mail.

Well, maybe I'll drop Pat a note about the ball game, just to find out.

Connolly is *Computerworld*'s technical sections editor. His MCI Mail address is 507-1804.

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Links

Xylogics, Inc. has introduced the Annex Printer Server family.

According to the company, the products enable users to access, distribute and manage printers. A combination of two high-speed parallel ports and eight serial ports are provided, allowing users to attach PCs, terminals, modems and other devices along with high-speed printers.

Both Unix Transmission Control Protocol/Internet Protocol and Digital Local-Area Transport protocols are simultaneously supported, providing transparent access to any printer connected to an Annex Printer Server.

The Annex Printer Server family is available in two models, with prices starting at $1,995.

▶ *Xylogics*
53 Third Ave.
Burlington, Mass. 01803
(617) 272-8140

Xyplex, Inc. has announced the eight-port entry-level MX-800, the high-performance 20-port MX-1620 and the 40-port MX-1640 stand-alone communications servers.

The products are multifunction servers that provide network access locally and on a remote dial-up basis for an assortment of devices from PCs and terminals to data acquisition devices and bar code readers, the company said. Simple Network Management Protocol support is provided for configuration and network management.

The servers can be used on IBM, Unix and Digital Equipment Corp. systems.

The eight-port 800 costs $1,595. The 20-port 1620 costs $3,995, and the 40-port 1640 is priced at $5,995.

▶ *Xyplex*
330 Codman Hill Road
Boxboro, Mass. 01719
(508) 264-9900

Fax

Alcom, Inc. has announced the LanFax Redirector 2.1-GL (LFR 2.1-GL), a local-area network fax server.

The product was designed for GammaLink's GammaFax boards and offers 32-line support, enhanced inbound routing capabilities and a number of new features such as Tag Image File Format support, the company reported.

Heavy inbound and outbound fax traffic can be handled because the LFR 2.1-GL supports up to 32 fax lines in a single server.

New intelligent inbound routing capabilities support five routing methods: Non-Standard Format-based routing, Dual Tone Multifrequency, Direct Inward Dialing, Source-ID routing and Channel routing.

To enhance the performance and functionality of LFR 2.1-GL, speed enhancements and printed confirmation slips have been provided. The server requires a dedicated 386 or above PC with MS-DOS 5.0, 4M bytes of random-access memory, an 80M-byte hard drive and GammaFax fax cards.

A 50-user version of LFR 2.1-GL costs $2,995, and the 100-user version costs $4,995.

▶ *Alcom*
1616 N. Shoreline Blvd.
Mountain View, Calif. 94043
(415) 694-7000

Net technology pace winds developers

By Elisabeth Horwitt

With the market heating up and the pace of introductions quickening, major internetworking and network management players are finding they can no longer afford the time to develop key products in-house — or at least the players' technologies.

As a result, they are acquiring key niche players.

A good example is Peregrine Systems, Inc.'s recent purchase of Network Edge, Inc., a Colorado Springs company whose software enables Hewlett-Packard Co.'s OpenView to manage Novell, Inc. NetWare local-area networks. The acquisition offered Peregrine a chance to branch out into NetWare management from an established position in IBM and Unix systems management, said Jill Huntington-Lee, principal at Brandywine Network Associates, a Cinnaminson, N.J., consulting firm.

"A few years ago they might have developed the technology themselves; but things move so fast today, they can't afford to," she added.

Acquisitions abound

Other recent examples of companies buttressing their product lines through acquisitions include the following:

•Network Systems Corp. bought Bus-Tech, Inc. in Burlington, Mass. Bus-Tech develops hardware that connects different types of LANs to IBM mainframes. One of its more strategic offerings is an IBM 3172-compatible cluster controller that connects to an IBM channel and runs Novell's NetWare for SAA host interconnect software. Network Systems specializes in host channel-based networking.

•Peuril DataComm Networks in Galthersburg, Md., acquired Datability, Inc., a LAN bridge, router and communications server vendor in Carlstadt, N.J. Datability will become a new division of Peuril, alongside the existing DataCom Division that sells modems and T1 multiplexers.

•Xylogics, Inc. in Burlington, Mass., acquired Novell IPX protocol technology and the LANModem product line from Microtest, Inc. in Phoenix. The company plans to integrate the technology into its Annex line during the next year, enabling the communications server to support remote access and dial-up routing for three key protocols: IPX, Apple Computer, Inc.'s AppleTalk and Transmission Control Protocol/Internet Protocol.

Network

CONTINUED FROM PAGE 57

"That underscores the fact that technology really pays for itself," he said.

The CADS database houses geographic and other information tied to people's telephone numbers.

For instance, when an emergency call comes in, the call taker automatically receives the caller's address and location, such as a bedroom where a disabled person sleeps.

The database also includes historical information that lets dispatchers predict where emergency calls may come from. Based on trends such as traffic patterns and current data such as road construction, the dispatcher can route the vehicles the shortest way.

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- 25 call takers.
- 446 regularly scheduled vehicles per shift.
- 516 mobile data terminals.

Software picks

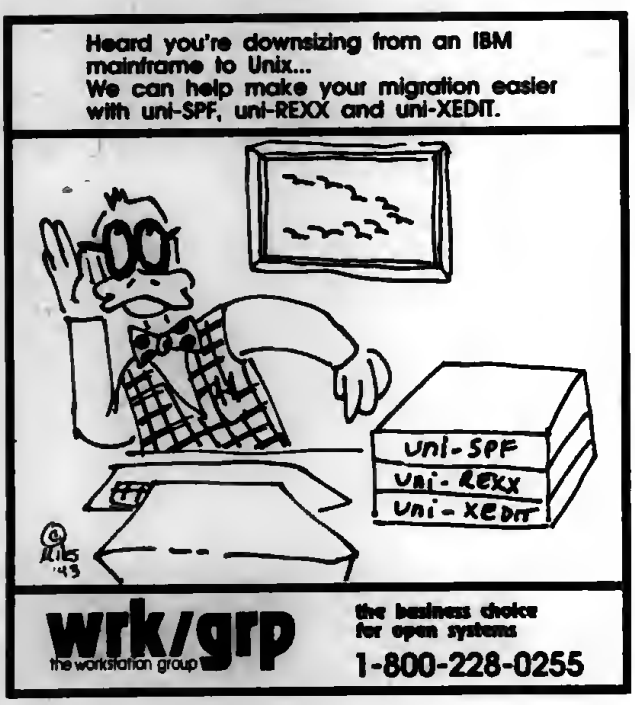
The software supporting the emergency dispatch systems was written in Natural programming language by Software AG of North America in Reston, Va. The database structure is Software AG's Adabas database management system. The city chose Adabas because it operates on the mainframe and Unix platforms using the same code.

"For the most part, the MVS version is the same as the Unix version, so we can move to Unix-based machines and distributed processing with the same staff that has been building expertise in our department for 30 years," Stromboe said.

One of the challenges in building a scalable system was figuring out how to keep multiple databases synchronized. For example, the mainframe version of the geographic information file is updated from other offices, such as the tax office, and must be replicated on the Unix boxes. So Software AG had to provide software that replicates the geographic database in several places every 30 minutes, Stromboe said.

Other factors driving the move to Unix-based client/server include cost/performance ratios. For example, Stromboe said the two NCR 3450s cost approximately $30,000, and he pays in excess of $400,000 every year just for maintenance of the MVS software.

Stromboe said he plans to move other applications such as payroll processing and accounts payable and receivable off the mainframe. However, "we have enough life in the one we have to last another five years, based on our growth rate," he said.



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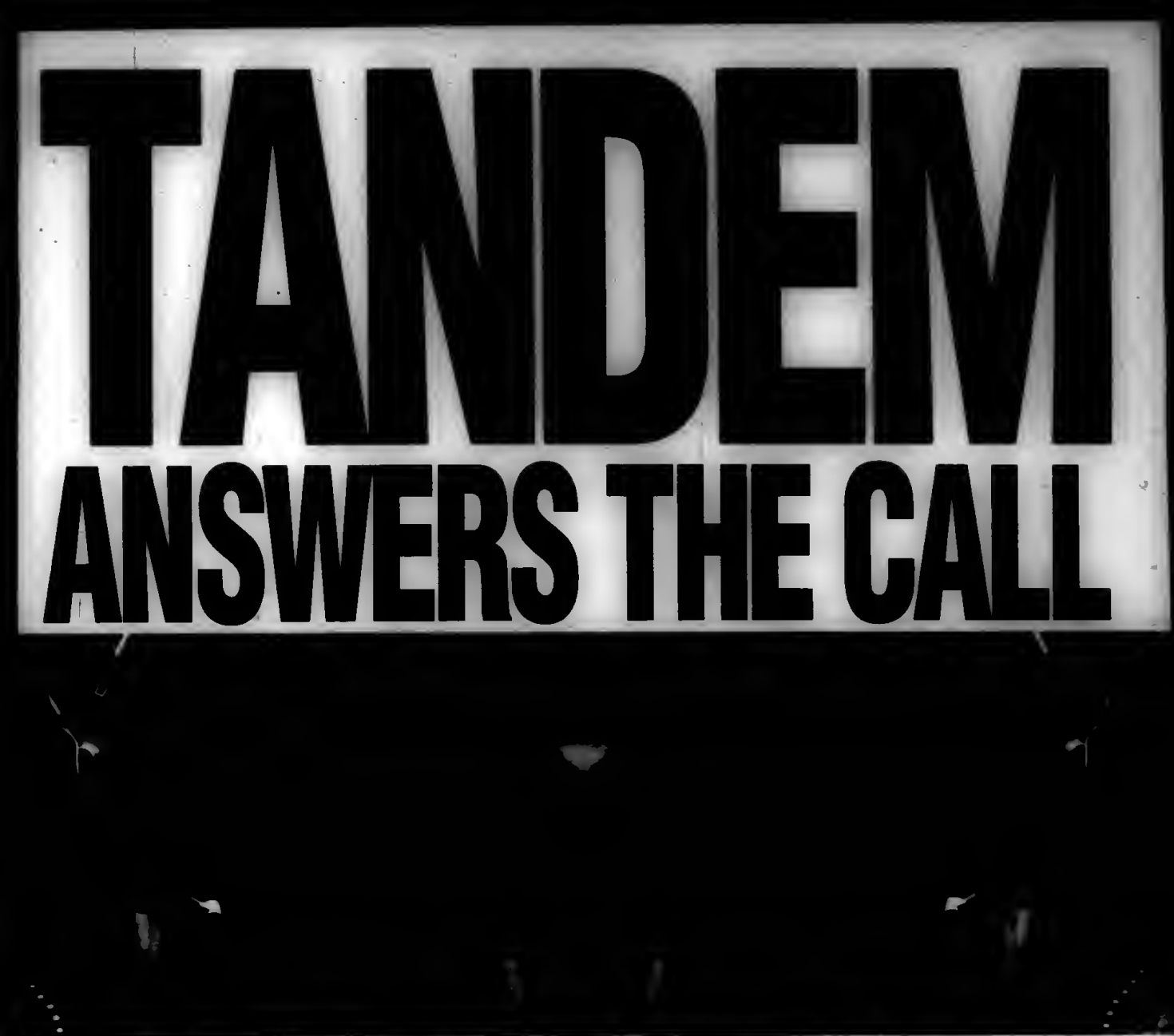
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IBM Business Partner

Mainframers: We're no dinosaurs

Even as client/server systems push out big iron, mainframers say their skills will still be in demand

By Johanna Ambrosio

It may be wishful thinking by the politically incorrect, but some mainframers expect their ship to return one day soon. As client/server applications take hold in corporate America, the theory goes, the mainframe skill set will be a requirement for these systems to truly succeed.

"All the mistakes that client/server applications are making were made 20 years ago" by people who tend the mainframe, said Carl Henderson, systems manager at Canadian National Railways in Montreal. "I don't worry about my job because there will always be one."



Henderson and others at a recent meeting of mainframe maintenance programmers in San Francisco pointed out how client/server applications increase the need for the things that mainframers already know how to do: enterprisewide security, backup, software distribution, change management and just getting things to work together without blowing up.

Still, it is a tough time to be associated with mainframes because the information systems training and travel money generally goes to people working on the "hot" projects that typically do not involve a host computer. Also, companies may be reluctant to provide new opportunities for someone who may be their only real expert on a given critical production system.

All this makes it difficult for mainframers to get the training they need on client/server technologies. Especially key skills for the host-centric involve desktop operating systems, the C programming language and local-area networks.

One mainframe programmer who spoke anonymously summed up the dilemma: "My company has a policy of us not working after hours on anything except emergencies, so it's difficult to stay here and learn what I need. So I've set up a local-area network with three PCs in my living room at home. I just can't tell anyone that I'm doing that."

Numbers dropping

Nathan Lowell, an IS director in Buffalo, N.Y., and president of the Software Management Association, the group that hosted the meeting, said, "Companies are unwilling to invest in training. Our membership has dropped from almost 900 in 1989 to under 400." Only about 100 people made it to the San Francisco gathering, and this number included consultants and representatives from software vendors.

Lowell agreed, however, that mainframers' skills will come back in vogue. "Saying that client/server replaces mainframes is like saying you're going to scrap the interstate highway system to buy a new kind of car. The existing systems have buried in them all the rules that control the business; only people don't know what those rules are. The promise of client/server doesn't replace that."

According to the Software Management Association, there are some 2.5 million programmers in North America, 1.5 million of whom work on maintaining main[illegible] large applications

Another programmer spoke with some pride about how his group was called in to rescue a client/server project gone awry because of a lack of policies and procedures. "It makes you wonder who's really got the walnut-size brain," he said, referring to the oft-cited reference to mainframers as dinosaurs.

"I see our role becoming the keeper of the corporate data, having to control the PC world and make sure that the software is all legal and that people's files don't get lost," said Dennis Power, director of technical services and operations at Atlas Van Lines in Evansville, Ind. "The mainframe technical people here are very close-knit with our PC network people. If they have problems or questions, they talk to us."

Although programmers might feel otherwise, these issues are not entirely lost on some top IS management. "There's an element of truth in what they're saying," said Jens Pedersen, vice president of IS at Great-West Life Assurance Co. in Denver. "Backup, recovery and other kinds of data processing hygiene are going to become important factors in the client/server world.

"I think there's a tremendous role for people willing to make the effort to bridge the gap between the mainframe and client/server environments," Pedersen added.

However, Pedersen said, programmers must be proactive in getting the skills they need and not just sit back waiting for the phone to ring. "I don't think there's anyone better motivated to look after your education than you are yourself."

SAS optimizes applications by distributing across networks

By Gary H. Anthes
NEW YORK

■ At its annual user conference here recently, SAS Institute, Inc. outlined a client/server approach based on the assertion that many existing tools for distributed computing are not well-suited for analysis and retrieval of information from very large remote databases, especially when they are nonrelational in structure.

SAS President James Goodnight said most desktop SQL-based query products are "partial solutions at best," appropriate only for low-volume applications accessing relational databases. He said many applications, especially executive information systems drawing on large databases, are optimized by client/server implementations that split processing logic across the network, allowing client and server each to do what they do best.

To back that up, SAS demonstrated its SAS/Connect product, which enables remote servers to act as compute servers as well as data servers. Its "remote submit" feature allows local SAS statements to be sent to a SAS session on a server for execution. That allows preprocessing and summarization of the database, minimizing traffic back to the client.

Blue Cross/Blue Shield of Connecticut has SAS products on its IBM 3090/600 mainframe and on its local-area networks, and it uses SAS/Connect to initiate SAS processing of huge files — some with 50 million rows — on the mainframe before sending summary results to Microsoft Corp. Windows-based PCs for final processing and presentation.


Server savvy
SAS/CONNECT SOFTWARE ENABLES REMOTE SERVER PLATFORMS TO ACT NOT ONLY AS CLIENT/SERVERS BUT AS COMPUTE SERVERS
Server
Remote processing request
Client

CW Chart, Michael Siggins

"Only small portions of data are returned, so response on the PC is real good," said Michael L. Davis, research staff assistant at Blue Cross/Blue Shield. Moreover, Davis said, the big data-crunching jobs can be scheduled for overnight processing when the mainframe is lightly loaded.

Davis pointed out another advantage to the approach: It allows moving specialized SAS modules — for modeling, graphic presentation and the like — to the desktop, where SAS license fees may be an order of magnitude less than equivalent SAS products in the glass house.

"That is definitely a good approach for the kinds of applications where there is a substantial amount of data slicing and dicing that can be done on the server," said Scott Winkler, program director of software management strategies at Gartner Group, Inc. in Stamford, Conn. "It can keep the network from being overloaded with needless data transfers."

Bert Cave, senior product manager for SAS at Intel Corp., said Intel hopes not to buy any more mainframes and is reviewing all its applications to determine which should be moved to client/server. He said some such applications will be implemented using local databases while others will use SAS/Connect to get data from existing mainframe databases.

SAS, *page 67*

An experiment in connections

An experimental feature of SAS/Connect, called "remote library services," allows client SAS sessions to reference software libraries that send remote data to the client. The feature can also be used to update a remote file with data sent from the client. Syntax is the same as for purely local operations. The feature, to be shipped with SAS 6.08 in August, is ideal for low-volume transaction processing, according to SAS.

Mainframe computing

Sallie Mae fights back against its critics

By Mitch Betts
WASHINGTON, D.C.

President Bill Clinton wants to eliminate Sallie Mae, but the clever lady is fighting back with a mixture of old-fashioned lobbying and leading-edge technology.

Clinton and other critics said the government's student loan program would be more efficient if the Student Loan Marketing Association, better known as Sallie Mae, and other financial middlemen were cut out of the picture. Sallie Mae, however, is out to prove them wrong.

AT A GLANCE

Sallie Mae
Student Loan Marketing Association
Washington, D.C.

- Business: A federally chartered, stockholder-owned corporation in the secondary market for education loans. Founded in 1972.
- Assets: $46 billion.
- Profit (1992): $394 million, up 14%.
- Employees: 4,300.

To bolster its image for efficiency and innovation, Sallie Mae has been running full-page advertisements in national publications touting its mainframe system for servicing student loans. In addition, the government-chartered corporation is about to undertake a huge document imaging project that is expected to cost $50 million over four years.

Sallie Mae also has a grand plan to migrate its loan-servicing operation to a client/server architecture in which its mainframe would act as a central data server running IBM's DB2 relational database management system.

In the complicated world of guaranteed student loans, Sallie Mae raises money in the financial markets so it can buy student loans from banks and other lenders.

Then Sallie Mae services the loans, which means handling the administrative work of getting college graduates to pay up.

The cornerstone of Sallie Mae's loan-servicing operation is a custom-developed system called Class, which runs on an Amdahl Corp. 5990-3550 mainframe at the Herndon, Va., data center.

The 5-year-old Class automates virtually every aspect of servicing the loans in an effort to keep administrative costs and loan delinquencies down.

For example, every night it scans Sallie Mae's portfolio of 3.5 million student loans looking for past-due balances and other loan situations that need special attention.

President Clinton wants to eliminate Sallie Mae, but the student loan marketing association is using technology to stay in business, process loans and prove its worth. Sallie Mae also has plans for a 2,500-seat imaging system and migration to client/server systems.

If a borrower has missed a payment, for instance, Class and its integrated telephony system will dial the borrower's phone number and route the call and the loan records to a service representative.

In the second quarter of 1994, Sallie Mae plans to convert Class from the current IMS database, crammed with 500G bytes of loan records, to DB2 "so we'll have one logical view of the database," said Donald G. Gallagher, vice president for servicing and corporate systems.

The move to a client/server architecture is intended to give business managers the capability to use PC-based software for analyzing the huge loan database, he added.

"The wave of the future is not CICS, IMS and mainframes," Gallagher said. "We want to be in the position to take advantage of whatever off-the-shelf products come out to help users unlock information that is now hidden away in the mainframe."

An even more pressing project is selecting a vendor for the document imaging system, which is crucial for dealing with one of Sallie Mae's biggest administrative headaches: 3 million pieces of incoming correspondence a year.

"We have trucks backing up and depositing all this paper. Tracking and moving it around is just a nightmare," said Robert D. Friedhoff, senior vice president for servicing. "We want to stop that paper right in the mailroom, [scan it] and then move it around electronically," Friedhoff said.

The biggest challenge is how to build an affordable, high-bandwidth wide-

Sallie Mae, *page 67*

for NetWare
for OS/2
for UNIX
for Macintosh
for VMS
for MVS

Sallie Mae

CONTINUED FROM PAGE 66

area network capable of allowing 2,500 employees to access the document images, which will be stored on local jukeboxes at seven regional centers across the country, Gallagher said.

For vendors in the imaging business, the Sallie Mae contract is considered the "deal of the year." Gallagher said a handful of major vendors are in the midst of test demonstrations. He said he expects a decision in June or July.

An industry source said the bidders for the prime contract include IBM, Price Waterhouse and Grumman Data Systems, the Herndon, Va.-based systems integration unit of Grumman Corp.

Sallie Mae's crusade for efficiency and innovation is a response to the political and competitive threats to its core business.

Plans to cut

President Clinton said the government could save $1 billion a year by scrapping the current student loan program and allowing students to borrow money directly from the federal government, without intermediary banks and Sallie Mae.

But Sallie Mae and other supporters of the current system scoff at the notion that federal bureaucrats could do a more efficient job.

Computerization and competition among Sallie Mae and rivals such as Citibank NA and Chase Manhattan Bank NA have steadily driven down the administrative costs of servicing the loans, according to a Congressional Research Service report.

However, the legislative battle over student loans and the future of Sallie Mae are likely to be spirited. U.S. Sen. Paul Simon (D-Ill.), for example, recently blasted Sallie Mae for being "so consumed with self-interest" that it has employed high-powered lobbyists to block reform and preserve its subsidies under the status quo.

In any case, Sallie Mae is preparing for an uncertain future in which it may need to develop new lines of business. "We want to get [our information system] to the point where it is flexible enough to handle whatever the future brings," Gallagher said.

SAS

CONTINUED FROM PAGE 65

"A lot of our demand for SAS running on Intel platforms is coming from our mainframe and VAX users," Cave said. "As a first pass, we will do as much as possible on [the desktop] but connect to [the large machines] for data from legacy systems."

Winkler said preprocessing of server data can be done with SQL queries, but there is a danger that improperly constructed queries may send too much data across the network. Also, programs are often written in languages more difficult than SAS commands.

"So here I am, the end user on my PC," Winkler said. "I create this analysis in SAS, which I am trained in as an end user, and then I ship that function up to the server to get the work done.

"It makes sense for people who are looking at different decision support environments to deploy this kind of system, especially if they've got end users who really want to get involved in determining their own analysis," he added.

Up and coming from SAS

SAS attracted much interest from its demonstrations of the Frame feature of SAS/AF, which allows users to quickly build or enhance applications based on object-oriented technology.

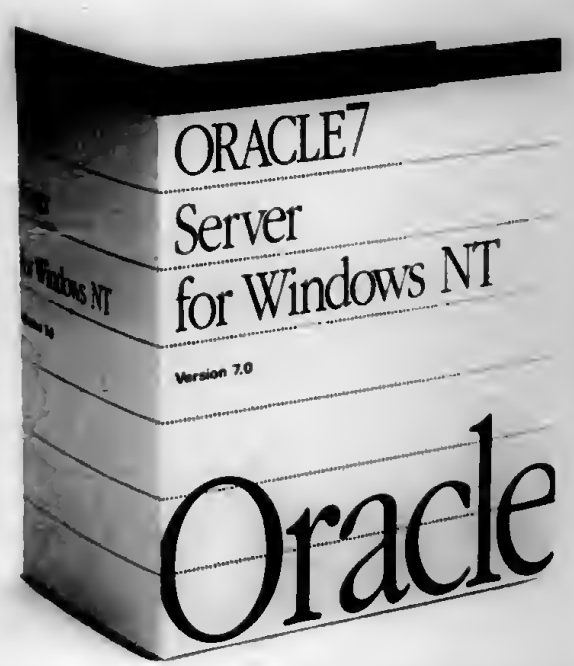
"It is quite a revolutionary approach," said Khasha Dehnad, a manager at The Depository Trust Co. in New York, which recently built an executive information system using SAS' object-oriented products.

The Cary, N.C.-based company also did the following:

- Announced that it has begun shipping the beta-test release of the SAS System for major Unix platforms and for a new environment, Convex Computer Corp.'s ConvexOS. It will contain experimental versions of new products for developing geographic information systems and for manipulation of image data. SAS said it has also begun shipping beta-test copies of SAS for Microsoft's Windows NT.
- Unveiled Emulus, a 3270-emulation product that allows users of major Unix platforms to access 3270 applications on IBM mainframes using Transmission Control Protocol/Internet Protocol.
- Announced a C++ development environment for IBM 370/390 environments running MVS or VM/CMS.
- Announced "interoperability engines" to aid in the migration of applications and files from Digital Equipment Corp. VAXs to Alpha systems.

— Gary H. Anthes

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Ingres users speak out

By Jean S. Bozman
SANTA CLARA, CALIF.

Users of The ASK Group, Inc.'s Ingres Products Division database faced another beginning earlier this month, as a new group of top Ingres executives outlined their plans to improve marketing to the North American Ingres Users Association (NAIUA). Many users said this fresh start — which dates to a March reorganization of $432.4 million ASK — should be built on closer ties to users.

Ingres, long known for its advanced database technology and low-profile marketing, has already requested direct feedback, users said. "Ingres held a customer advisory council at the end of March," NAIUA President Dwight Coles said. "That was a first for us."

Ingres product managers are also drawing users into the product design process, said Matt DiMaria, director of Ingres tools marketing. DiMaria said he expects the inclusion of users to set priorities in development projects.

Peter Micchiche, vice president of Ingres' North American operations for the past four months, acknowledged user frustration at seeing two executive teams since the ASK applications software firm acquired Ingres for its database in September 1990. "Because you have seen other management regimes speaking in front of you, we have a near-term credibility gap," he said.

Micchiche said the latest organization [CW, March 15] would allow the firm to focus on the U.S. and Canada because more than half of Ingres' $254.9 million in 1992 sales came from overseas, particularly Europe. ASK Chief Executive Officer Pier Carlo Falotti said the users "have been right all along. They understood the ability of the product despite a lack of market visibility."

Team approach

The NAIUA plans to keep close to Ingres by reincorporating the 8,000-member user group in California. It also plans to work with other Ingres user associations worldwide to present its product requests with greater impact. Incoming NAIUA President Kitty Weaver, a systems administrator at the National Center for Atmospheric Research in Boulder, Colo., said the NAIUA has infrequent contact with European Ingres user groups, except for an annual meeting with Ingres users in the UK.

Donald DePalma, a senior analyst at Forrester Research, Inc. in Cambridge, Mass., said Ingres management understands the need to focus on North America, where sales have lagged in recent years. "They lost a lot of time and momentum with the ASK acquisition," he said. "There were a lot of issues about how to fit Ingres into ASK's MANMAN strategy, and it didn't fit." ASK ended up acquiring technology for its MANMAN/X open systems applications suite from a Dutch company, Baan NV.

Some Ingres users noted recent improvements in North American product support. Canadian user Sean O'Hara, a programmer analyst at Promotional Services Ltd. in St. John, New Brunswick, said his firm used to get technical support for the Unisys Corp. U 6000 machine from the UK. In recent months, support was moved to Ingres headquarters in Alameda, Calif., improving response time, he said.

Ingres' jewels

Highlighting the NAIUA conference was a preview of enhancements for the 3-year-old Ingres/WindowsGL graphical application development toolset.

Ingres said it intended to deliver the following products within 24 months: "Ruby," a graphical report writer; "Amethyst," a graphical user interface-based code generator; and "Jade," an enhanced version of the basic Ingres/WindowsGL tool set, which is expected to be called Ingres/WindowsGL 2.0.

Product details are scheduled to be announced this fall, Ingres said.

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DEC boosts its storage line

By Melinda-Carol Ballou

Digital Equipment Corp. updated its storage line with a series of products announced earlier this month.

Dubbed StorageWorks, the products are based on the Small Computer Systems Interface-2 standard and offer a modular design that places storage devices, controllers, power supplies and other components into snap-on carriers.

These carriers can then slide into modular shelving and packaging that can be configured for a range of options from the desktop to the high end, DEC officials said.

The following products were included in the announcement:

- The StorageWorks RAID Array 110 is a turnkey, controller-based random arrays of inexpensive disks (RAID) subsystem for VAX-based systems.
- A Desktop Expansion unit allows for entry-level desktop storage. It targets the workstation market (initially supported on the DEC 3000 AXP, Model 300L).
- The Datacenter Cabinet expands high-end DEC 7000 AXP and DEC 10000 AXP systems.
- The StorageWorks Desktop Pedestal expands on systems ranging from the DEC 3000 AXP to the DEC 10000 AXP.
- Four RW500 optical storage libraries or jukeboxes offer automated, low-cost access to data, according to DEC officials.

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In Brief

IBM to sell parts

IBM has announced that it will supply parts, services and software to two mainframe computer manufacturers in the former Soviet Union. The two plants, in Moscow and Minsk, will manufacture rack-mounted, air-cooled machines similar to the low end of the Enterprise System/9000 family. This is reportedly the first time that IBM is selling major components to another mainframe maker.

Trucker migrates

Truck manufacturer Paccar, Inc. in Renton, Wash., and integrator Innovative Information Systems, Inc. in Norwood, Mass., have put the finishing touches on a project in which Innovative Information Systems migrated Paccar's warehouse control system from an IBM 8100 to a Hewlett-Packard Co. HP 9000 running Unix.

Revenue growth expected

Unisys Corp. said this month that it expects its U.S. multivendor network systems integration services revenue to double in 1993.

Parts a phone call away

NCR Corp. has established NCRParts, a toll-free order desk where NCR customers can order replacement parts for NCR System 3000 products, AT&T PCs, workstations and peripherals.

Ready to deliver

Officials from supercomputer maker Cray Computer Corp. reported that the National Center for Atmospheric Research, the first Cray-3 customer, is expected to take delivery of its demonstration and evaluation machine later this month.

HP exec promoted

Glenn Osaka, whom HP late last year promoted to run its HP 3000 proprietary minicomputer operations, has picked up additional duties. HP last week named Osaka general manager of its Cooperative Computing Systems Division, which markets client/server solutions. The post was vacated last month when general manager Carol Mills moved over to run HP's Unix minicomputer business [CW, March 22], according to the company.

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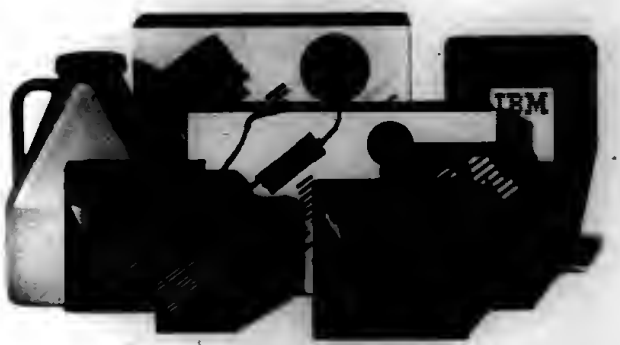
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Unix

Pyramid Technology Corp. has introduced ServiceExpert, a continuous monitoring analysis reporting system designed for mixed-vendor Unix environments.

According to the company, the product allows users to identify and respond to early signs of potential hardware errors and system software problems. Large amounts of system performance data are generated, forming reports that enable users to make proactive decisions by examining maintenance requirements. ServiceExpert also produces network statistics, long-term trend reports and application support.

The product has the ability to track a variety of Unix and Pyramid-specific parameters, such as file permissions management, file and directory size changes, log file archival management, file system integrity, systems error log monitoring, password/group file integrity and remote access memory, among others.

ServiceExpert starts at $750 per month per system.

▶ *Pyramid Technology*
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Software application packages

System Software Associates, Inc. has introduced Version 4.0 of its Business Planning and Control System (BPCS).

The product was designed for organizations running IBM's Application System/400. It has the ability to integrate more than 40 business applications, giving users a customer-driven enterprise management system.

Two client/server applications have been added to this version: Formulation Assistant and User/IFX.

Formulation Assistant defines product process formulations and works in conjunction with the AS/400 database; it has pop-up windows, pull-down menus and an icon tool palette.

User/IFX is a fax and image server application that enables users to send and receive faxes and images from their AS/400-connected workstations, the company reported.

BPCS applications are priced from $1,500 to $240,000 per product per license, depending on the AS/400 model used.

▶ *System Software Associates*
500 W. Madison
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(312) 641-2900

Interactive Software Services, Inc. has announced Version 4.2 of AMIS 400 and three other software products.

According to the company, AMIS is the only decision-support software that runs specifically on IBM's Application System/400. It now features an Intuitive Rebalance that directs how the database is recalculated.

The other products are:

- AMIS EIS, an executive information system that assists users in making complex business decisions. With desktop PCs, users can view selected key performance indicators in a graphical environment.
- AMIS Connect, which allows any AS/400 application to be linked to an AMIS database.
- The AMIS Workstation, a Microsoft Corp. Windows-based PC version of AMIS that enables users to analyze and model data in the AMIS 400.

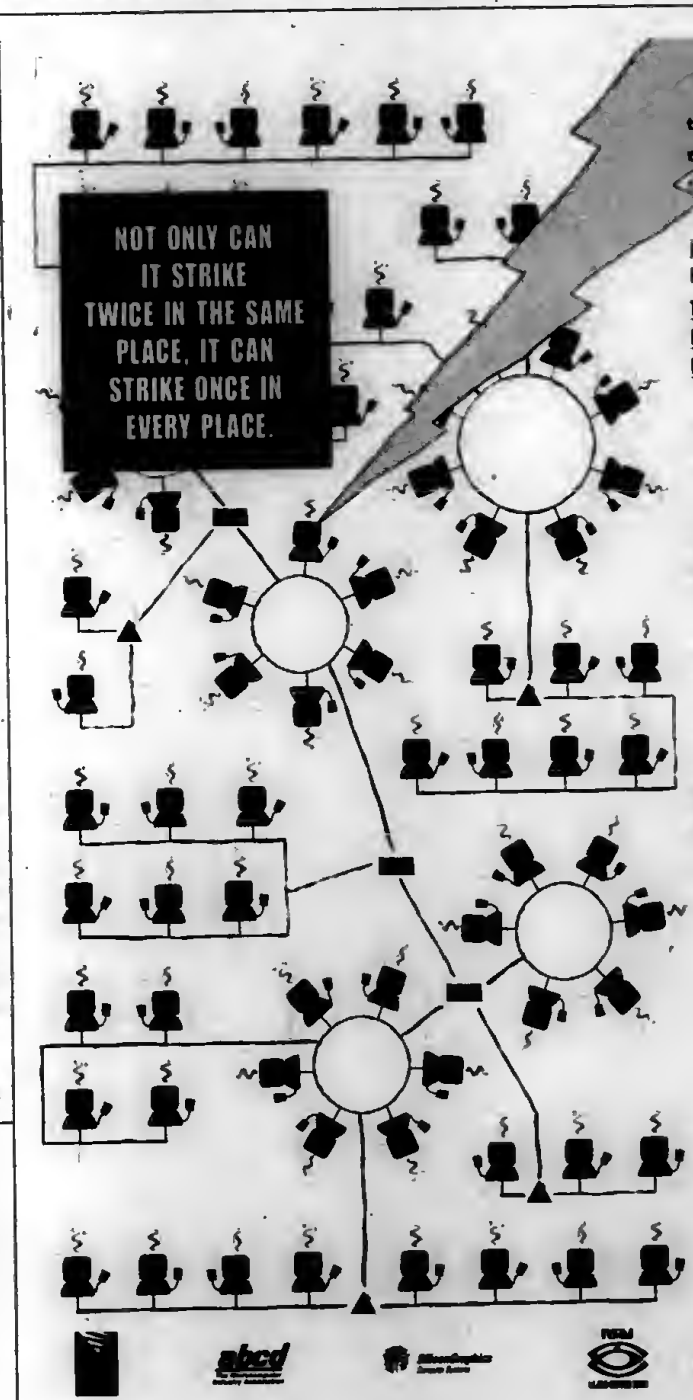
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CPWADV0524

Pen Pal a friend to developers

By Michael Fitzgerald

Pen computing continues to attract interest among niche market users, such as utilities.

In an effort to capitalize on this, PenPal Associates has released a new version of its Power Pen Pal application development tool and cut the price from $995 to $695.

At Mooongahela Power Co., the software product is expected to save $3,500 per year per user just in terms of time efficiencies, according to data from a pilot project at the Fairmont, W. Va., company.

Monongahela found that a pilot application designed to automate its field engineers saved them significant amounts of time simply by eliminating the need to type data from forms into desktop PCs. The seven-person pilot, using software developed in Power Pen Pal Versions 3.0 and 4.0, is expected to lead to a 48-unit rollout by the fall.



Independent Stave *improved its barrel inspection process with Pen Pal 3.0*

Debra Ann Champ, a distribution engineer at Monongahela Power, said Power Pen Pal is a time-saver in program development, too. Monongahela Power purchased Power Pen Pal partway through a pen-based pilot program that had started with PadBase, a Grid Systems Corp. tool. Champ has converted 460 forms from paper to digital media, including debugging. The process took six months.

Monongahela Power switched to Power Pen Pal 3.0 because PadBase was "cumbersome and C-oriented and not user-friendly," Champ said. Pen Pal offered specialized commands that made it easy to design pen-based staples such as buttons to click on, and it offered reasonable handwriting recognition. Champ said she also liked that changes could be made to programs in a matter of minutes.

Champ said Power Pen Pal 4.0 has an improved ability to manage forms; the previous version was unable to handle all the forms Monongahela Power had. The new version also has better linking commands and clearer error messages.

Analysts credited Los Altos, Calif.-based Pen Pal Associates for strengthening its tool while keeping it easy to use.

"It was a nice little product, but they needed to beef it up, and they have," commented Portia Isaacson, president of Dream IT, Inc., a consultancy and market research firm in Colorado Springs.

One new feature is the ability to support dBase DBF files, which Pete McCoy, a technical specialist at Alabama's State Auditor's Office, cited as key. The office uses pen computers to track state property, from scuba tanks to office equipment.

Still, some users will stick with Pen Pal 3.0, at least for now. Jack West, an assistant plant manager at Independent Stave Co. in Lebanon, Mo., had no programming experience but was able to build an application that improved the barrel maker's inspection process in two months. "We had to transfer the data four times before we got computers," which created significant opportunities for mistakes, West said.

Growing pains

Object-oriented databases lack development tools

By Garry Ray

With activity heating up around object-oriented databases, you may think it is time to jettison the relational model.

Not so. And not for some time, according to analysts and users of the technology. While object-oriented database management systems have been gaining notice in technical shops and academia, they have yet to provide the range of programming and modeling tools that are widely used in corporate settings.

"For the most part, the tools are for technical programmers," said Steve McClure, manager of object technologies at consultancy International Data Corp. in Framingham, Mass. In almost all cases, object-oriented DBMS projects still require the expertise of C++ programmers, he said.

Going mainstream — slowly

- **Object Design** this month signed an equity and development deal with IBM that calls for object-oriented database management system use in more than 40 IBM engineering sites.
- **Object Design** last year inked a deal with fourth-generation language vendor Progress Software.
- **Objectivity** and **Persistence Software** agreed to integrate their products, which allow object-oriented DBMSs and relational databases to work together.

Recent announcements may indicate that object-oriented databases are beginning to jump into the mainstream of development technology.

Last month, IBM and Object Design, Inc. in Burlington, Mass., cut a joint development and licensing deal that will result in an estimated $25 million in sales for Object Design. IBM will use Object Design's ObjectStore database at more than 40 research and development sites nationwide, according to an IBM spokeswoman.

However, IBM does not anticipate releasing any commercial applications or development tools for the database in the immediate future, the spokeswoman said.

In addition, Progress Software, Inc. in Bedford, Mass., said late last year that it would provide a bridge between its Progress 4GL development tools and ObjectStore. The bridge will allow Progress developers to read data to ObjectStore databases.

Growing pains, *page 80*

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Cincom offers more intuitive interfaces

By Melinda-Carol Ballou

Cincom Systems, Inc. has announced Microsoft Corp. Windows support for the company's AD/Advantage application development environment and a point-and-click graphical user interface for its Control:Manufacturing software.

Cincom also began shipping its CPCS Request Tracking System for use with its CPCS Management and Guidance System.

AD/Advantage for Windows is a PC-based application development and testing workbench for generating applications in a graphical environment. The Windows support will allow developers to more efficiently create applications that are portable — running across IBM's MVS and VSE, Digital Equipment Corp.'s VMS, Groupe Bull's DPX/7 and other versions of the Unix, OS/t and MS-DOS operating systems, Cincom officials said.

The software will automatically determine which type of interface is required and generate it, said Dennis Butler, director of product management. Mantis design objects can be imported from existing systems into the new editors offered by AD/Advantage.

The new Control:Manufacturing software's Turbo interface will let users navigate standard manufacturing functions. It is also available for users with Windows and Apple Computer, Inc. Macintosh desktop platforms.

The pull-down menus, point-and-click access, desktop integration and graphical buttons will make life easier, according to users at Ethicon Endo Surgery, a medical manufacturing plant near Cincinnati that is a division of Johnson & Johnson Co.

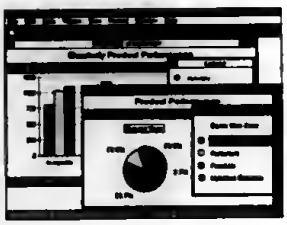
The Turbo interface to Control:Manufacturing "is terrific — it gives us much easier user access with point-and-click capabilities," said David Pomment, materials manager at Ethicon.

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Growing pains

CONTINUED FROM PAGE 79

Gene Bonte, vice president of workstation and server products at Object Design, said the relative vacuum of object-oriented DBMS tools is consistent with the evolution of any new technology.

"First people evaluate whether the technology is real. Then they do prototyping work to evaluate the benefits. Finally, they build products and move to deployment," Bonte said.

C++ hindrance

However, the trip from prototyping to widespread deployment may not be a speedy one if C++ programming is the only way to get there. According to Stephen Hunter, a database programmer and senior consultant at Sterling, Inc.'s intelligence and military division in Vienna, Va., the current object-oriented database management tool offerings are inadequate at best.

"This stuff has got to improve," Hunter said. "There's no way a user can get to an object database, and it's even hard for programmers."

Hunter said he has been using Objectivity, Inc.'s Objectivity/DB database and Persistence Software, Inc.'s Persistence development tool for an application accessing "terabytes" of relational data used by a federal intelligence agency. Those vendors, in Menlo Park, Calif., and San Mateo, Calif., respectively, announced the integration of their products earlier this month.

In the end, widespread use of object-oriented database products may happen only if an alternative is found to the C++ programming they now require. Persistence Software President Chris Keene, who acknowledged that the complexity of C++ is "a real issue" in the adoption of object-oriented DBMSs, said the answer may come with a less fashionable, but more usable, object-oriented Cobol.

"A lot of people may shudder" at that prospect, Keene said, but "the question is not elegance, but what people can use."

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Apple adds multimedia authoring tools

By James Daly
CUPERTINO, CALIF.

Apple Computer, Inc. continued its aggressive effort to drive development of the multimedia market with the introduction of a fresh pair of authoring tools designed to offer newcomers a jump start into multimedia development.

The move is an important one for Apple, which is looking to expand its role in a market that is potentially lucrative but has yet to hit its stride. One stalling factor, developers said, is that authoring tools are often difficult to use.

"The availability of intuitive and easy-to-use authoring tools is essential to the growth of the multimedia industry," said Gaston Bastiaens, general manager of Apple's Personal Interactive Division.

The first tool, The Author's Solution for Interactive Electronic Books, has been targeted at electronic book publishing, one of the fastest growing areas of multimedia development.

The new tool kit has been designed to help fledgling multimedia programmers overcome some of the complexity of multimedia programming through easy-to-use tools as well as support and training resources, according to Satjiv Chahil, vice president of Apple's New Media/New Markets organization.

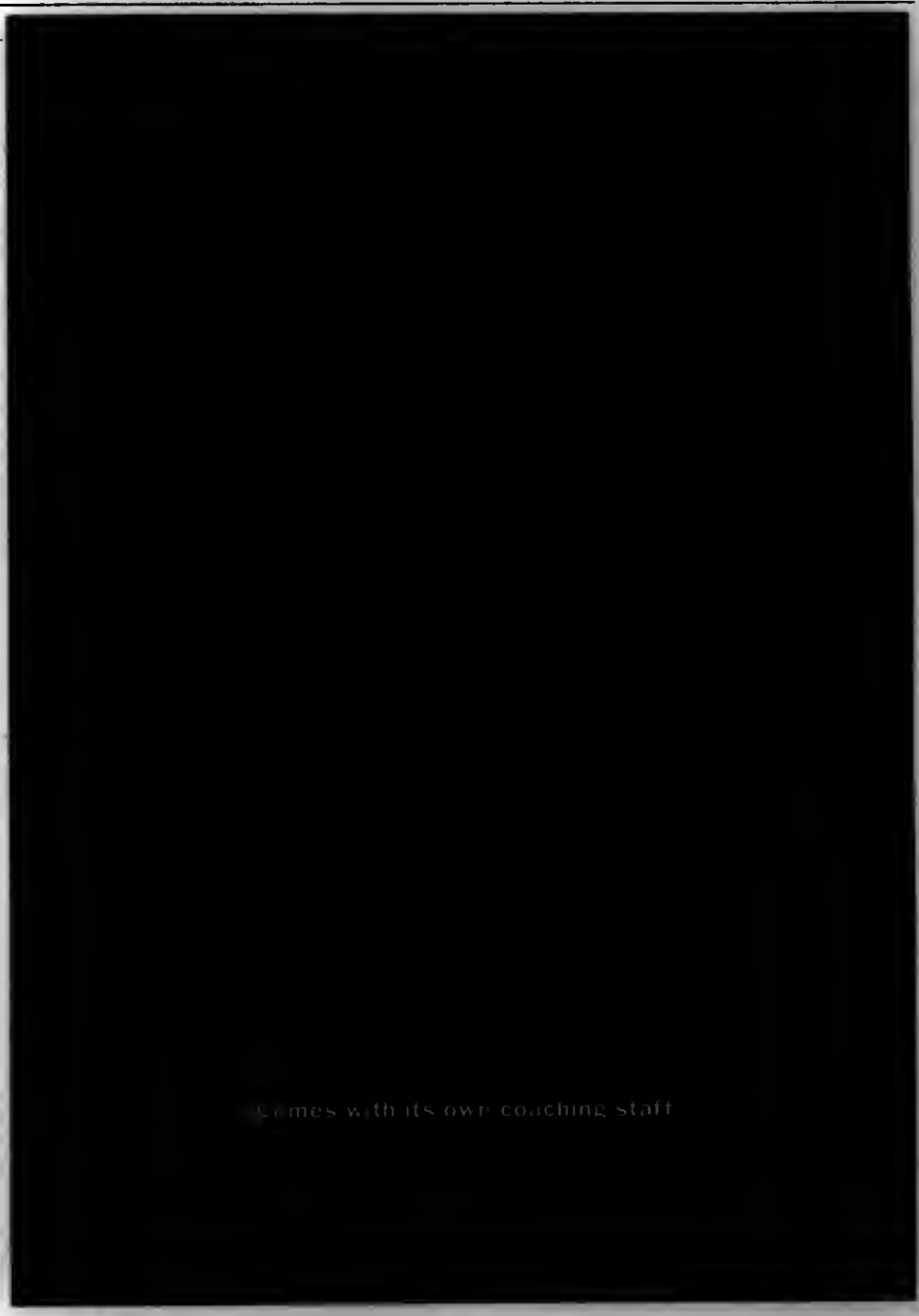
The Author's Solution will come in two configurations. The Level I Kit is a starter product for designing multimedia documents, especially those for internal distribution in a school or company.

The Level II Kit is a more comprehensive version that can be used to produce professional-quality electronic books within hours, Apple said.

The Author's Solution for Interactive Electronic Books is available through APDA, Apple's source for developer tools. The Level I product is $125, while the Level II Version is $350.

Apple also announced The Apple Media Kit, which is targeted at authors engaged in the tricky business of pulling in graphics, video and sound from other multimedia applications. The product will make extensive use of Apple's Quicktime multimedia architecture and will support multiple platforms, including Windows.

The Apple Media Kit is also expected to support ScriptX, a cross-platform scripting language under development from Kaleida Labs, Inc. The media kit will ship later this year, according to Apple officials.



In Brief

Object computing alliance

Expersoft has announced the formation of the Distributed Object Access Alliance, a company-sponsored consortium of software vendors and systems integrators interested in distributed object computing. The San Diego-based vendor of the XShell distributed environment has enlisted five software companies and two systems integrators in the alliance so far.

MVS PL/1 emulator

IBM and Micro Focus, Inc. said they have jointly developed an MVS PL/1 emulator for IBM's OS/2 called Micro Focus PL/1 for ADMVS. The compiler, which includes compiler and debugging technology that Micro Focus licenses from IBM, emulates TSO/ISPF and job streams using MVS JCL, in addition to other PL/1 facilities.

SPARCworks adds CASE

Interactive Development Environments, Inc. (IDE) in San Francisco and SunPro, Inc., the application development tools division of Sun Microsystems, Inc., have agreed to integrate IDE's Software Through Pictures computer-aided software engineering (CASE) tools with SunPro's SPARCworks C and C++ development tools.

Application development tools

MicroStrategy, Inc. has released the Unix version of EISToolKit, an application development environment.

The product was designed for constructing applications for cross-platform, client/server executive information systems and decision-support systems in the Sun Microsystems, Inc. OpenLook and the Open Software Foundation Motif environments.

Platform features include presentation graphics, spreadsheet modeling tools, database connectivity and a graphical user interface. A fourth-generation programming language called Hyperscript, a Function library and MicroStrategy's UltraSQL are also provided.

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(302) 427-8800

Data Techniques, Inc. has announced Versioo 2.0 of ImageMan/VB, custom controls for use with Microsoft Corp.'s Visual Basic programming system.

The product enables users to add sophisticated image processing and scanning capabilities to their Visual Basic applications. Support is provided for processing, displaying and printing common PC-image file formats such as PCX, DCX, Targa, GIF and Tag Image File Format with Group 3/Group 4 fax compression, among others. Versioo 2.0 now supports scanners and digital cameras.

ImageMan/VB costs $249.

▶ *Data Techniques*
Suite 120
1000 Business Center Drive
Savannah, Ga. 31405
(912) 651-8003

Bloc Sky Software Corp. has announced Visual SQL, a prototyper and ANSI source-code generator for creating Microsoft Corp. Windows-based client/server applications.

Working with Industry-standard C or C++ compilers, Visual SQL geoerates ANSI C source code that makes direct calls to the database application programming interface (API) and the Windows API, the company reported.

The product costs $4,900.

▶ *Blue Sky Software*
Suite 3
7486 La Jolla Blvd.
La Jolla, Calif. 92037
(619) 459-6365

Template Software, Inc. has introduced SNAP Release 5.0, an advanced template-based development environment for constructing business-critical, distributed applications.

Enhancements to the product include oew graphical user interface (GUI) building tools and expanded capabilities of the Shared Information Base.

SNAP Release 5.0 offers "drag-and-drop" icons and predefined and extendable objeet classes that support GUI displays such as forms, tables, text, graphs and topologies. Predefined GUI widgets such as cascading menus, check boxes, file selectors, list boxes and radio buttons are also provided.

Pricing begins at $50,000.

▶ *Template Software*
Suite 340
13100 Worldgate Drive
Herndon, Va. 22070
(703) 318-1000

Code libraries

EMS Professional Shareware has started shipping the C/C++ Utility Library.

According to the company, a total of 914 public domain and shareware products are compressed onto 43 1.44M-byte disks or one CD-ROM. An indexed database includes descriptions of all the products.

Users can find selected C/C++ products by name, vendor, type, release date or free-text search across descriptions. An assortment of types of files are housed in the library, such as Benchmark, Debugger, Link List, Code Analysis, Graphics and Memory, among others.

The library costs $59.50 oo CD-ROM and $149 for the disk versions.

▶ *EMS Professional Shareware*
4505 Buckhurst Court
Olney, Md. 20832
(301) 924-3594

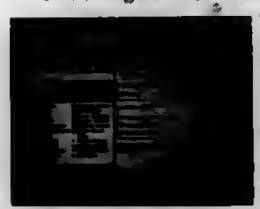
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Users rate top packages

PAGE 128



Full listing of the Windows World Open finalists. Page 113

Face to face with Microsoft Chairman Bill Gates. Page 123

Spreadsheet showdown: Excel, Quattro Pro and 1-2-3 for Windows. Page 128

Ami Pro garners high ratings in word processing category. Page 129

Microsoft's Access, Borland's Paradox for Windows compared. Page 132

The big SELL

Developing Windows applications is easy. Getting buy-in from business heads, end users — and even IS — is another story.



▶ **Con Ed's Rich Davisson:** *'My management was leery. When you say Visual Basic, it sounds so bubble gum in a mainframe shop.'*

By Julia King

Charlie Cappello and his team had the developers blues.

The Microsoft Corp. Windows-based tracking and archiving program they'd developed for Mingione, Borrusco & Co. was great, but the intended users were balky. So what to do? Cappello tempted them with golf.

Accustomed to working in a character-based computing environment, most managers at the East Haven, Conn., accounting firm were wary of moving to a completely new and different graphically oriented operating environment. So Cappello, the firm's technical adviser, gave them games — first solitaire, then golf.

It worked. In less than a week, the senior partner was consistently scoring under par on-screen, and after four weeks and less than $3,000 in development and testing fees, Docman, the company's custom Windows-based document management system, was subsequently put into production.

At Consolidated Edison Co. of New York, Inc., systems manager Rich Davisson had to do some politicking of a different kind to bring up a proposed Windows-based application for tracking and merging chemical information from nine power plants.

The company's mainframe-oriented information systems managers wanted no part of PC-based applications development, much less Windows, which Davisson was banking would be easier for plant operators to learn and use.

To make matters worse, Visual Basic, Microsoft's primary tool for developing Windows applications, was in its first release. "My management was leery," Davisson says. "When you say 'Visual Basic,' it sounds so bubble gum in a mainframe shop."

So Davisson outflanked them. He went to his customer base, showing prototype screens to power plant operators and other workers who would actually use the program. Buy-in was almost immediate, and Davisson got the backing he needed to go ahead with the project.

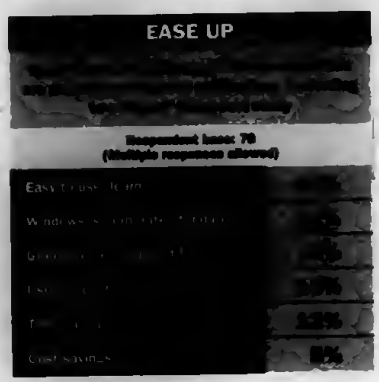
Both of these cases illustrate a simple point: Conception and development are just two — and perhaps the simplest — challenges in launching a successful custom Windows application. The harder issues include the following:

- Selling the program not only to upper management and users but also sometimes to the IS staff itself.
- Establishing compatibility with previously standardized applications and development tools.
- Securing the capital necessary to upgrade PC hardware and network servers to run Windows programs.
- Mediating internal political battles and cultural clashes.

IS support

If nothing else, support from IS must be won.

To that end, many companies are making sure IS gets involved early, even though many



Source: Buyers' Scorecard

King is a free-lance writer based in Ridley Park, Pa.

COMPUTERWORLD

WINDOWS

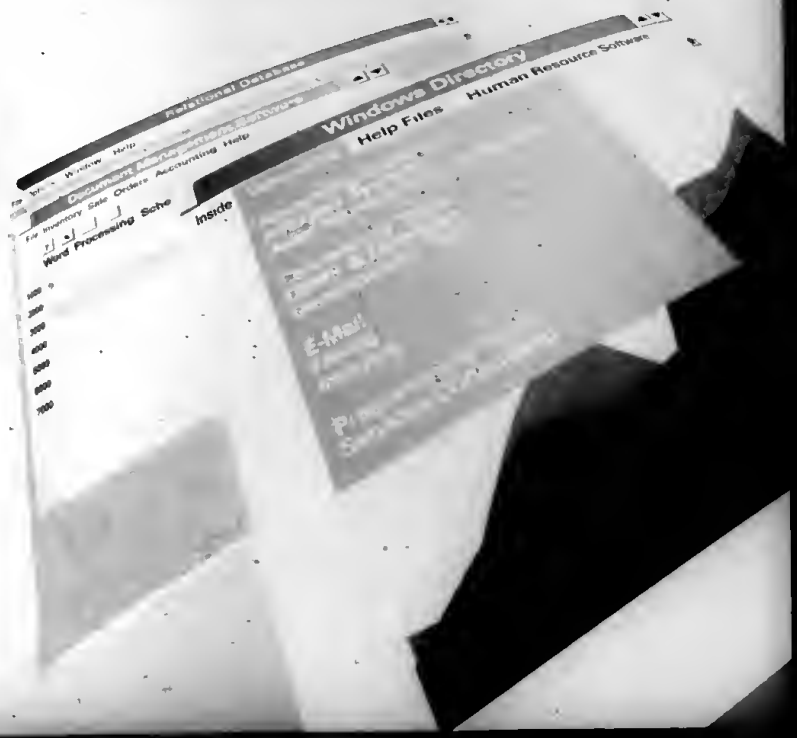
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to Computerworld's first-ever Windows Directory for the Information Systems Environment. Computerworld is pleased to bring you, the Computerworld reader, this special directory of Windows products and services.

You'll find plenty of valuable products and services.

The companies whose products & services appear in this new directory have contacted Computerworld directly and have paid for their appearance so that they may hear from readers like you: professionals who they consider to be key users of their products and services.

Please save this directory for future reference.

Or pass it along to someone who might also find it useful. We've designed this special directory for you to use now and into the future. To gain the maximum value, please page through it to see the various specialty classifications that appear alphabetically.

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The index of all products and services described in the directory appears on pages 18 and 19.

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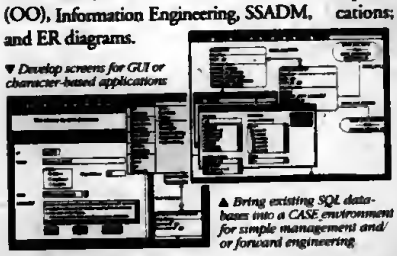
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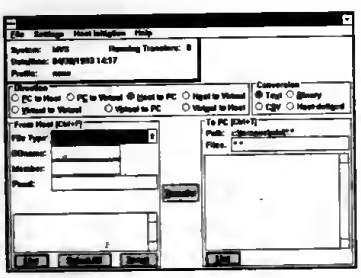
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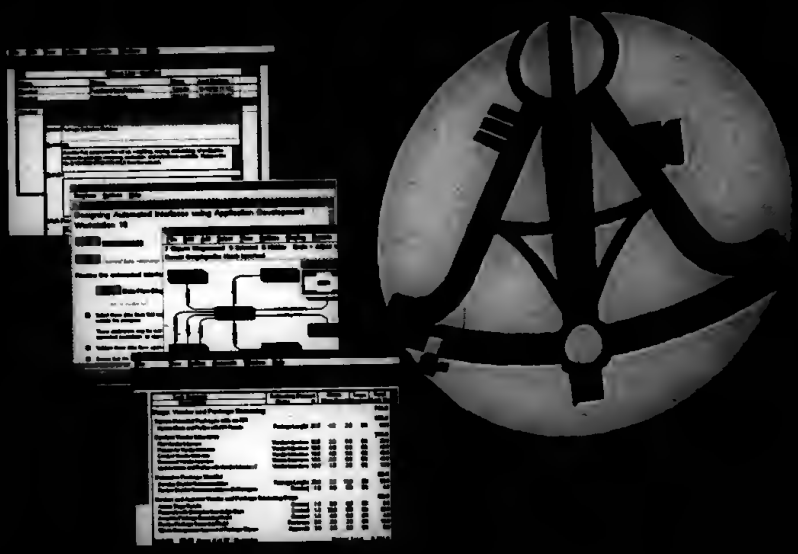
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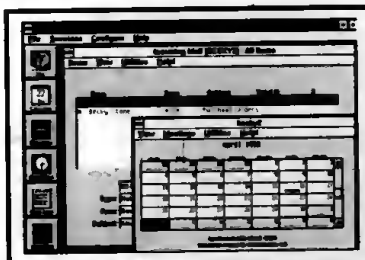
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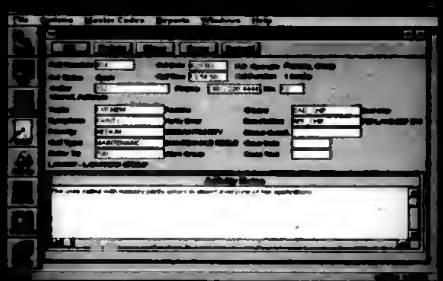
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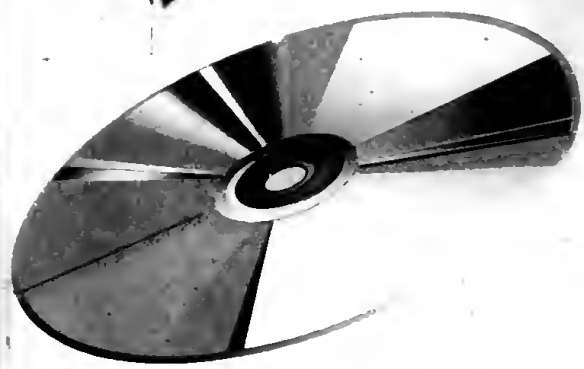
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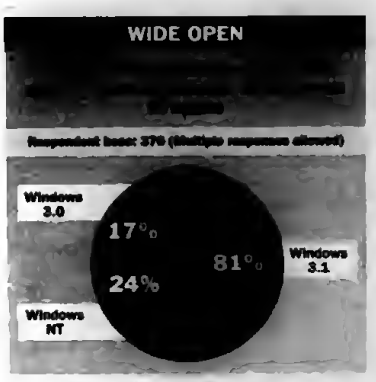
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Source: Microcomputer Managers Association/IDG Research Services

of these applications are conceived by departmental application developers, says Bill Cornfield, president of The Windows Support Group, a New York-based consultancy.

The result? Reduced tension between IS and departmental application developers and increased technical quality and overall scalability of custom applicatioos.

"More and more, we're seeing professional [IS] folks getting involved" in Windows applications development, Cornfield says. "They used to look at Windows as a toy, but now they're seeing how much can be done with it."

The importance of IS buy-in is best illustrated by looking at what happens when it has not been achieved.

Take the case of Harley-Davidson, Inc. The Milwaukee motorcycle manofacturer's trademark and licensing department brought in ontside consultants to develop s custom Windows-based application for tracking trademark infringers.

In the meantime, Harley's IS department was already standardized on non-Windows technology and wasn't eager to involve itself in the trademark department's project.

On arrival, the consultants interviewed the department's users, who showed them finished documents generated by the largely paper-based system in place at the company.

Weeks later, when the consultants returned with prototypes of screens for the new application, they quickly discovered that earlier documents used in the tracking process had been omitted.

"Now the screens have to be rebuilt, and the consultants want us to pay for it," says Bill Wood, manager of trademark enforcement at the company.

However, Wood does not blame the consultants. He says that if his department had had the full support of corporate IS on the project, these problems may not have occurred.

"We can request help from the IS department, but they are busy, and it may take them a couple of weeks to get back to me. Meanwhile, we don't want to hold up the consultants," Wood says. "Since we don't have full cooperation from in-house MIS, it is harder to communicate with the consultants."

Despite the problems, Wood says he remains committed to seeing the application through to completion and bringing it up by July 1. He says he expects the new Windows-based Trademark Wizard program, once running, will eliminate the need to hire at least three new employees at an annual salary of $40,000 each.

"We don't see our investment paying off now, and that's very frustrating," he says. "Still, we know there will be big savings down the road, and that's what makes this all worthwhile."

Support from the ground up

Most companies that embark on Windows projects do expect big payoffs, and most receive them — in the form of user satisfaction and lower development costs.

But the secret, they say, is to start at the departmental level, where PC-based developers and departmental managers opt to start in on smaller applications as a way of establishing a track record with the operating system.

"With a test project, where dollars are insignificant, it's easier to pass it through and show the benefits," says Frank Ramos, chief information officer at United American Healthcare Corp. in Detroit.

The big sell, *page 111*

The secret to Windows development: Start at the departmental level to establish a track record.

Of mice and Yen

When the First National Bank of Chicago needed financial software that customers could use worldwide, it built on Windows

FINALIST: WINDOWS WORLD OPEN

The First National Bank of Chicago had a problem. Like many other large banks, it was in the business of selling software to its corporate customers, allowing them to initiate electronic payments anywhere in the world, manage their investments and reconcile their accounts.

Trouble was, the bank's customers were using eight different stand-alone DOS applications that had been developed over the years for various tasks.

"Using three or four products got to be difficult for our customers because the products differed in their interface, security methods and communications functions," says Rich Hebda, vice president at the bank.

The bank felt it, too. When new capabilities such as local-area network support were required, First National had to build the new feature into each individual product, as well as support and maintain a welter of applications. More up-to-date products produced by competitors were also threatening to snatch away market share.

That's where Windows came in. Hebda's group dreamed up a client/server application that would integrate all of a corporate customer's worldwide cash-management functions under a single roof.

But the team couldn't "dream" the application into reality. Worse, Hebda's staff had never developed in Windows before. "There was this old MIS mentality about doing traditional design, but it just doesn't work well for creating a Windows product," Hebda says.

Hebda says Symantec Corp.'s Actor, an object-oriented development tool, helped make it easy to create prototypes. The team also used C.

The resulting application, FirstWindow 2000, provides funds-transfer and reporting functions for global payments in a single application. About 20 corporate customers currently use the product on 500 workstations.

The application uses Dynamic Data Exchange to make communications transparent to end users. Once the user creates and sends in the transactions, First National's Tandem VLX system routes them to the appropriate back-office mainframes for processing.

When the product was released in October 1992, it produced immediate benefits for the bank.

"We probably sold more new business in two months than we had in the past year," Hebda says.

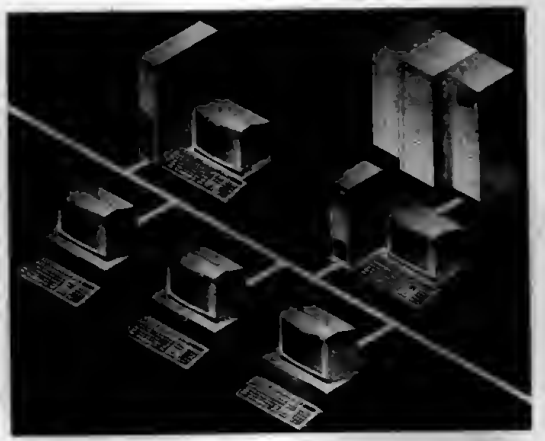
Future plans include improvements to the product's interface to integrate it more tightly, Hebda says.

Hebda's ultimate goal is to be the leader in the world of cash management applications. "Because there's more emphasis than ever on information, people in the banking business need to become as knowledgeable about creating applications as software developers," he says. — *Written by Anita Amirrezvani, a contributing editor to* PC World Magazine.



▶ **First National's Rich Hebda** *put all cash management functions under one roof*

There's a lot of serious rethinking going on in the area of information management. Because companies need to take advantage of new technology while keeping the best of their existing systems. They need to go to client-server computing. Without moving out of the mainstream.





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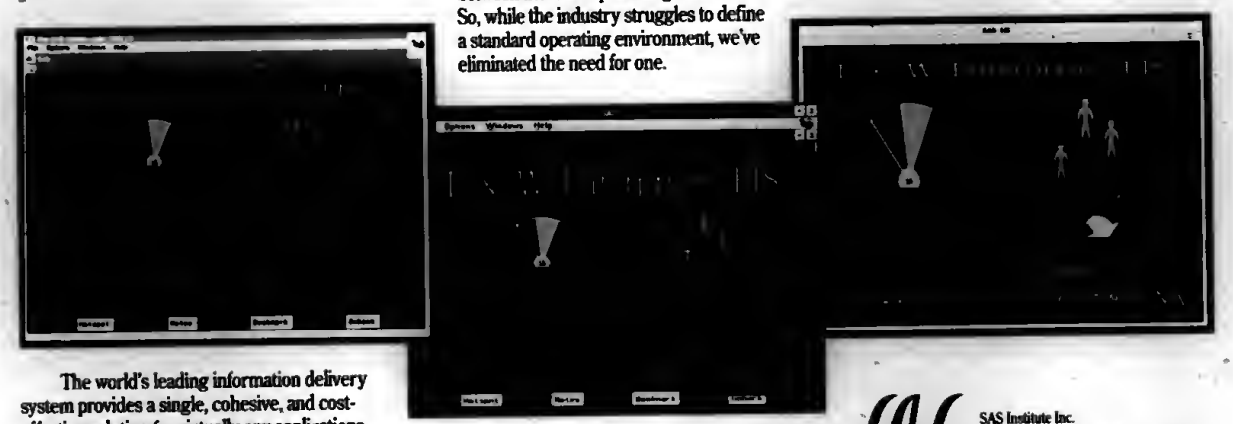
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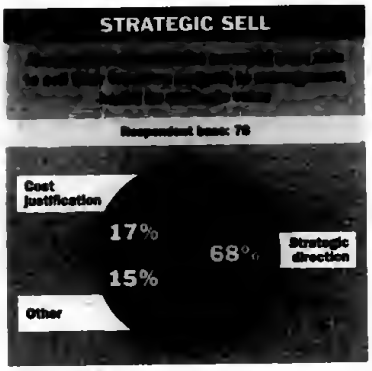
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Continued from page 107

Ramos says he expects to cut operating and maintenance costs by about $350,000 annually with Relay 1.0, a custom Windows-based application that furnishes clinics in Cleveland and throughout Michigan, New York and Washington, D.C., with eligibility information on 175,000 United American Healthcare subscribers.

Developed in less than four weeks at a cost of $90,000, Relay 1.0 replaces a mainframe application, which employed a dedicated Prime Computer, Inc. 5370 computer to provide subscriber data.

Still, even Ramos' small project faced skepticism from line management.

"Initially, it was difficult to convey to management the advantages of something so dramatically different from a character- and terminal-based system," he says.

His group got buy-in by exposing managers to Windows-based tools such as Microsoft's Excel.

"They could see for themselves the ease of use and productivity gains," he says. "Having them feel the technology was critical to selling them on Windows."

Windows face-lift

At New York-based Citibank NA, senior executives were already well-acquainted with off-the-shelf Windows applications when staff members at the corporation's technology arm, Citibank Transaction Technology, Inc. (TTI), began work on a new Windows application. But in this case, familiarity didn't go very far.

Developers planned to build a Windows-based front end to Citimail, the bank's entrenched but user-ugly, mainframe-based electronic-mail system.

Initially deployed in the 1960s, some 25,000 Citibank employees worldwide use Citimail to communicate across many geographic regions and time zones. But its de-

Letting users try out an application in its early stages works well with Windows.

cades-old interface hadn't kept up with the times, says Carol Medine, director of application development at TTI.

"It was very counterintuitive. People hated to use it but were forced to," she explains.

What was clearly needed was a new user-friendly interface to the system, Medine says. But internal politics were a big problem.

For starters, Citimail was supported by Citibank's corporate IS department, which was experienced on IBM mainframes and had little interest in Windows.

Moreover, these staff members didn't take kindly to the idea of "outsiders" from TTI coming in and telling them how to improve a system they had been operating for more than 25 years.

Medine and her group ultimately overcame this resistance by tapping corporate officers to beta-test MailView, the Windows-based

The big sell, *page 112*

Rocket manager

Lockheed's Windows-based facilities management software keeps things humming at its Space Shuttle plant

Want to sell your application to upper management? Show them a prototype that can retrieve and display several thousand data points on-screen while running a Windows word processor, a fax program and a graphics package.

That's what Ken Forster, a systems engineer at Lockheed Missiles and Space Co., did to prove that his Process Control System was powerful enough to run on the factory floor.

"I was able to run all of those packages and show that the application didn't fail in its task of trending data," he says.

FINALIST: WINDOWS WORLD OPEN

It was no small accomplishment. Forster's application was developed to replace an antiquated and unreliable minicomputer-based system that monitored industrial controllers for Lockheed's metal parts finishing facility, which makes Space Shuttle components. The plant houses clean rooms, paint booths and a chemical processing area.

"Having that system go down was like losing all the gauges in an aircraft — we would have been flying blind," Forster says.

The resulting Windows application was developed using InTouch, an object-oriented industrial application tool. The system runs on a six-node, peer-to-peer network that uses Microsoft's Windows for Workgroups. The application is displayed on 20-in. monitors with touch screens, so users can interact with the program by touching the screens directly or by using a mouse.

This lets plant operators control and modify the plant environment from the PC. For example, they can increase the temperature of a chemical tank just by touching the screen. The screens played a big role in getting Forster user collaboration, a techniqne that paid off big time in the final evaluation.

"I developed a few critical screens and then had people try it out and give their input," he says. At least half of the interface ideas are the result of staffers' requests for specific features.

Another big challenge was developing the touch application. "You need to make the control elements large enough so you can discriminate between them accurately," Forster says.

But the major benefit of involving the staff in development became clear when the old system was unplugged: "By the time the system was completely phased in, I didn't need to do any formal training because everyone had already tried it out," Forster says.

—Anita Amirrezvani



▶ **Lockheed's Ken Forster** *showed upper management the power of Windows*

Continued from page 111

front end they had developed for the E-mail system. "They gobbled this stuff right up," she says, "so the IS people supporting Citimail had to offer it. There was a grass roots demand for it."

Today, more than 5,000 disk versions of MailView have been distributed to Citibank staff members at a cost of about $5 each.

Medine attributes users' overwhelming acceptance of MailView to the iterative approach developers took throughout the design process, which lasted nine months. Using Actor, an object-oriented programming tool from Santa Monica, Calif.-based Symantec Corp., developers were able to quickly develop prototype screens, which they in turn took to users for comments.

This practice of letting users try out an application in its early stages is especially successful in the Windows environment, where a broad array of development tools makes it a relatively fast and easy process.

Outside help

Third-party tools, including the Victor Image Library for Windows from St. Louis-based Catenary Systems, inc., were also instrumental in Real Data Management, Inc.'s development of an image-based real estate system. City Vision is a database containing text-, graphics- and video-based information about office space for rent in New York and Los Angeles.

The Victor library contains a wide variety of image display capabilities, which Real Data would otherwise have had to develop in-house. Without the library, developing a prototype quickly to show customers would have been impossible, says Kristan Stevens, Real Data's vice president of program development.

After all the wars have been fought and the applications deployed, most users report high satisfaction and hig success — even in the sometimes harrowing area of training.

At Mingione, Borrusco, staff members received four hours of training in Windows and Docman and have been using both — problem-free — for the past four months, according to Cappello.

At United American Healthcare, training users on both the Windows operating system and the Relay application was accomplished in a matter of days, Ramos says.

"I was eating my knuckles during training, afraid that users would say the whole thing was too complicated," he concedes. "But their response was totally the opposite. Now we're haying s problem holding users back. They want word processing and spreadsheet software. The application has opened np their eyes concerning technology." ▪

Windows Open finalists prove that application development can be done (see facing page).

1993 WINDOWS WORLD OPEN JUDGES

CHARLES BABCOCK Technical editor *Computerworld*	**CHRIS LINDQUIST** West Coast correspondent *Computerworld*
VINCE CHRISMAN Director of information systems Sandy Corp.	**JIM LISIAK*** PC specialist Chevron Information Technology Co.
GUS EVANS* President G. Warfield Evans Associates	**BRENT WILLIAMS** Director of PC software International Data Corp.
RAY HANSMAN Chief technologist Electronic Data Systems Corp.	**PAUL YAO** President International Systems Design

*Winners from the 1992 Windows World Open



▶ Real Data's Kristan Stevens *says DOS versions were impractical*

Point-and-click real estate

Real Data offers complete on-line commercial listings in New York and L.A. — in minutes

Real Data Management's DOS-based bread-and-butter program was giving its developers indigestion. But moving to a Windows version meant convincing the firm's clients that the benefits outweighed the hardware upgrade costs.

City Vision lets real estate brokers tap into a subscription database containing details about thousands of commercial spaces available for rent in New York. But its DOS incarnation was causing some support problems.

FINALIST: WINDOWS WORLD OPEN

"Under DOS, we had to write a lot of low-level routines to snpport all our customers' graphics hardware and printers," says Kristan Stevens, Real Data's vice president of program development. "It was becoming very impractical to keep coming out with new versions."

Windows' broad-based driver support would solve that problem and let Real Data embark on an ambitious expansion plan as well, he says.

The company wanted to create a massive new database containing property floor plans and maps and to put it, along with the Windows program, on CD-ROM.

This is where Real Data's program had to sell itself. Many of its customers did not want to shell out the money for a PC that would support Windows.

The key to winning over the brokers, Stevens says, was showing, not telling, the difference between the DOS package and the Windows prototype — and illustrating how the brokers could produce better marketing materials with Windows.

"When they saw that they could take pictures from the program and put them in PageMaker or Microsoft's Word to create pamphlets and brochures, we got a strong response from brokers," he says.

The program is also much faster. Stevens says generating a list of all the spaces available in Manhattan takes five minutes, compared with two hours on the DOS program.

The company's efforts have paid off, doubling the user base from 25 brokerage houses to about 50.

A new version is forthcoming for the city of Los Angeles, and three other cities have been signed up for the program, Stevens says.

—Anita Amirrezvani

Meet the FINALISTS

The following 24 companies are finalists at the Windows World Open competition

CATEGORY TRANSPORTATION COMMUNICATIONS UTILITIES

COMPANY: GALILEO INTERNATIONAL
LOCATION: ENGLEWOOD, COLO.
APPLICATION: PERSONAL APOLLO

■ An offshoot of the Apollo travel reservation system, Personal Apollo lets anyone with a PC, modem and Windows make his own travel arrangements 24 hours a day. Users can connect to Apollo through a public data network.

CATEGORY TRANSPORTATION COMMUNICATIONS UTILITIES

COMPANY: LEA & ELLIOT, INC.
LOCATION: CHANTILLY, VA.
APPLICATION: LEGENDS

■ Legends is a collection of integrated models used in transportation system planning, design and evaluation. Using this package, a planner can simulate the action of a train along a given route, recording all train movements and delays.

CATEGORY TRANSPORTATION COMMUNICATIONS UTILITIES

COMPANY: CONSOLIDATED EDISON CO. OF NEW YORK, INC.
LOCATION: NEW YORK
APPLICATION: CON EDISON CHEMICAL INFORMATION SYSTEM (CIS)

■ CIS is a real-time data acquisition system that monitors the chemistry of the water in fossil-power plant boilers. It provides chemical addition control, maintains a centralized database of process data and displays the chemical information in a Visual Basic Windows application anywhere on the Con Edison WAN.

CATEGORY INSURANCE REAL ESTATE

COMPANY: UNITED AMERICAN HEALTHCARE CORP.
LOCATION: DETROIT
APPLICATION: RELAY 1.0

■ Relay 1.0 provides communications between 1,500 health care providers, 48 hospitals and more than 500 pharmacies for Detroit-based Omni Care Health Plan. With comprehensive data on subscribers, family members and their health and claims history, Relay leads staff through on-line forms completion.

CATEGORY INSURANCE REAL ESTATE

COMPANY: MUTUAL LIFE ASSURANCE CO. OF CANADA
LOCATION: WATERLOO, ONTARIO
APPLICATION: PC DAX

■ PC Dax enhances the mainframe-based E-mail system. The interface 'remembers' how each user prefers his desktop set up and embeds spreadsheets, images, voice and programs into the messages.

CATEGORY INSURANCE REAL ESTATE

COMPANY: REAL DATA MANAGEMENT, INC.
LOCATION: NEW YORK
APPLICATION: CITY VISION

■ City Vision provides access to a subscription database used by commercial real estate brokers. The application creates and runs surveys of available building space in Los Angeles and New York, according to criteria such as size, rent rates, geographic boundaries, building owner, listing agent and space type.

CATEGORY GOVERNMENT PUBLIC ADMINISTRATION

COMPANY: GUILFORD COUNTY SHERIFF'S DEPARTMENT
LOCATION: GREENSBORO, N.C.
APPLICATION: SGT. CAD

■ Sgt. CAD is a computer-aided dispatching system for public safety. When a 911 call comes in, Sgt. CAD aids the dispatcher to dispatching help and alerts personnel on road hazards, also providing maps to the location. The package provides status on the call and links with other Windows applications through DDE.

CATEGORY GOVERNMENT PUBLIC ADMINISTRATION

COMPANY: U.S. GEOLOGICAL SURVEY
LOCATION: RESTON, VA.
APPLICATION: WAIS FOR WINDOWS

■ WAIS for Windows retrieves topically diverse information and data from a diverse group of sources on geologic, topographic and hydrologic information. Users can search for data on a specific location by clicking on a world map and zooming in to the desired location.

CATEGORY GOVERNMENT PUBLIC ADMINISTRATION

COMPANY: SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
LOCATION: DIAMOND BAR, CALIF.
APPLICATION: VOC RECORD KEEPING

■ VOC Record Keeping was developed to streamline current emission record-keeping and reporting requirements. It provides a South Coast Air Basin view of all sectors arranged by enforcement areas that change color dependent on the air quality status. This allows inspectors to check air quality at a glance.

CATEGORY SERVICES PROFESSIONS

COMPANY: CREADISA
LOCATION: SAN JOSE, COSTA RICA
APPLICATION: VIRTUAL MEETINGS

■ Organized into three modules, Virtual Meetings was developed as a package to handle concurrent group decision-making. The package organizes decision-makers into logical groups and allows concurrent real-time interaction among group members.

CATEGORY SERVICES PROFESSIONS

COMPANY: AMERVISION CORP.
LOCATION: SACRAMENTO, CALIF.
APPLICATION: HEAT IS ON

■ Heat Is On is a comprehensive, on-line computer simulation program that was developed specifically to assist the defense in a murder trial. The application incorporates testimony from a wide range of sources, including an expert in thermal physiology, a heating engineer and a trace-gas engineer.

CATEGORY SERVICES PROFESSIONS

COMPANY: J. WALTER THOMPSON
LOCATION: CHICAGO
APPLICATION: TV REACH

■ TV Reach helps produce effective and cost-efficient television media plans in minutes, letting the planner experiment with a variety of options while automatically monitoring projected costs of an advertising campaign.

CATEGORY FINANCE

COMPANY: FIRST NATIONAL BANK OF CHICAGO
LOCATION: CHICAGO
APPLICATION: FIRST WINDOW 2000

■ First Window 2000 offers integrated funds transfer and information reporting functions designed to streamline customers' global payment initiation process. Using First Window 2000, customers can initiate payments from any First Chicago account worldwide in any transaction type, any currency, to anyone, anywhere.

CATEGORY FINANCE

COMPANY: MINGIONE, BORRUSCO & CO.
LOCATION: EAST HAVEN, CONN.
APPLICATION: DOCMAN

■ For users at this financial services company, Docman provides a foolproof backup system for all documents produced and lets employees run word processing, spreadsheet and graphics applications without a large investment in Windows training.

CATEGORY FINANCE

COMPANY: CITICORP TRANSACTION TECHNOLOGY, INC.
LOCATION: SANTA MONICA, CALIF.
APPLICATION: MAILVIEW

■ MailView serves on a front end for Citicorp's old E-mail system, Citimail. It allows users to compose messages, read received messages, print and file messages and update their Address Book in a user-friendly Windows environment.

CATEGORY WHOLESALE RETAIL DISTRIBUTION

COMPANY: HARLEY-DAVIDSON, INC.
LOCATION: MILWAUKEE
APPLICATION: TRADEMARK WIZARD

■ Trademark Wizard allows Harley-Davidson to monitor royalty payments on more than 80 licensing agreements for products bearing more than 1,000 Harley-Davidson trademarks. The application lets users define new licenses and update data such as license agreements, royalties collected and infringements.

CATEGORY WHOLESALE RETAIL DISTRIBUTION

COMPANY: TACO BELL CORP.
LOCATION: IRVINE, CALIF.
APPLICATION: REAL ESTATE CONSTRUCTION MANAGER WORKBENCH

■ The Taco Bell restaurant development department uses this application to collect, analyze, evaluate, monitor and manage restaurant site data. The information used follows the site through its entire life cycle, from site selection to acquisition and construction.

CATEGORY WHOLESALE RETAIL DISTRIBUTION

COMPANY: WESTON INFORMATION NETWORK
LOCATION: TORONTO, ONTARIO
APPLICATION: WORKERS COMPENSATION EARLY INTERVENTION JOHU

■ This employee compensation claims management system operates over the company's WAN. Employees' workers compensation details are entered electronically. Once the claim is established, it is transmitted to the WCB. Creating the claim initiates a series of follow-up letters to the WCB and the family physician.

CATEGORY MANUFACTURING

COMPANY: LOCKHEED MISSILES & SPACE CO.
LOCATION: SUNNYVALE, CALIF.
APPLICATION: B/071 OPERATOR INTERFACE

■ The B/071 Operator Interface supervises the operation of Lockheed's automated advanced metal finishing facility. Providing access to each building subsystem, users can get data on anything from the building blueprints to operation manuals by clicking on the mouse.

CATEGORY MANUFACTURING

COMPANY: COMTECH
LOCATION: CARACAS, VENEZUELA
APPLICATION: PROCESS 2.0 FOR WINDOWS

■ Process 2.0 for Windows is a statistical process control application that helps improve the quality of manufactured products and services such as public transportation and health care. It monitors production processes, analyzing the variables and identifying differences in materials and performance of personnel and equipment.

CATEGORY MANUFACTURING

COMPANY: DIGITAL AUDIO DISC CORP. (DADC)
LOCATION: TERRE HAUTE, IND.
APPLICATION: COMPUTERIZED CD-ROM ORDERING SYSTEM (CCOS)

■ This application is a series of three Windows-based programs that simplify the ordering process for DADC and its customers. The primary program, CCOS, is used by DADC's customers to enter and store orders in a database, copy them for reordering, print them for faxing or transmit them directly via modem.

CATEGORY OTHER

COMPANY: SOUND APPLICATIONS, INC.
LOCATION: CAHABA HEIGHTS, ALA.
APPLICATION: SONOMASTER 2000

■ SonoMaster 2000 improves physician and technologist training in performing and interpreting diagnostic ultrasound examinations. Using a series of diagnostic boxes, the package prompts the student on how best to direct the ultrasound beam.

CATEGORY OTHER

COMPANY: PSICOR, INC.
LOCATION: SAN DIEGO
APPLICATION: OPERATOR STATION APPLICATION (OSA)

■ OSA is used in Psicor's dispatch center to schedule and dispatch technicians and equipment to about 400 hospitals in the U.S. and Canada. The application maintains a database of hospitals so that when a call comes in from a number in the database, the client and caller information is automatically retrieved.

CATEGORY OTHER

COMPANY: SHELL WESTERN E&P, INC.
LOCATION: HOUSTON
APPLICATION: MANAGEMENT INFORMATION GRAPHICS (MIG)

■ MIG is a decision-support database that provides a GUI for accessing visual trends and tabular views of business performance data. A user can select a business unit and performance category; MIG then displays monthly and cumulative data from the current year and previous two years, as well as current year forecast data.

Buying SMART



Five behind-the-screen issues and what to do about them

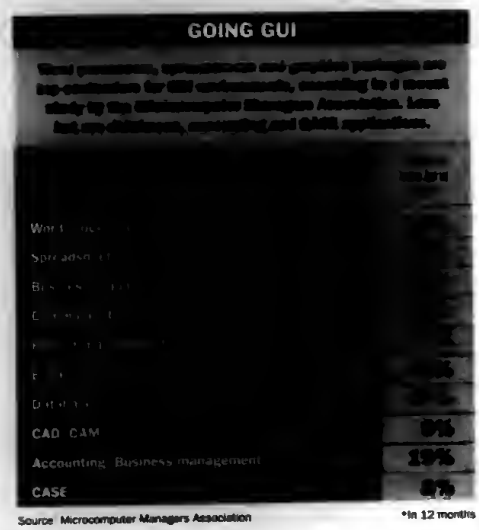
By Michael Drips

Ease of use is Windows' main claim to fame. But "ease" is not the first word that comes to mind when you're embarking on an enterprisewide installation of this environment.

Whether you're transitioning from DOS or just expanding your Microsoft Corp. Windows use, there are any number of areas in which you could make a wrong turn. Here are five of them.

The DOS-to-Windows translation factor. The first danger zone is the issue of transporting data from DOS to Windows. If the translation isn't done well, you could lose data or spend a lot of time editing corrupted files.

If your corporation is using DOS versions of WordPerfect Corp.'s namesake word processor and Lotus Development Corp.'s 1-2-3 spreadsheet, what happens if a decision is made to go with Microsoft's Office? Does Microsoft's Word translate WordPerfect DOS files as well as WordPerfect for Windows? No. Does Microsoft's Excel translate Lotus' 1-2-3 files as well as 1-2-3 for Windows? No. Does either Microsoft's Word or Excel translate the macro files from WordPerfect for DOS or 1-2-3 for DOS as well as their Windows counterparts? No.



Source: Microcomputer Managers Association

*In 12 months

The fact is, while all the mainstream Windows packages offer translators, each one performs differently. Programs such as 1-2-3, WordStar International, Inc.'s WordStar, Word and WordPerfect all do an excellent job of importing data from their own DOS versions; however, they don't do as well with competitive programs.

If your firm switches to a different word processor or spreadsheet on Windows, be sure to run extensive importation tests against DOS data before making the commitment.

Of course, there are workarounds to the data importation problem. For example, if a WordPerfect for Windows user downloads an electronic-mail message from CompuServe, the program won't be able to import it as an ASCII file; it will just put garbage on the screen.

But the user can open the file using Microsoft's Notepad (which ships with Windows), edit out the extra characters and save it as an ASCII file. Then WordPerfect for Windows will be able to open the file.

The choice between multivendor and single-vendor solutions. A second area lies in the choice of whether to hand-choose Windows versions of your favorite DOS programs — and end up with a group of programs from several vendors — or choose a group of applications from a single vendor.

The nice thing about upgrading your DOS applications is that it's economical (see "Shopping price," page 115). With WordStar, WordPerfect and 1-2-3, you also get perfect translation of your DOS files.

However, there are drawbacks. Each of these particular programs gives users the choice of implementing either a Windows-compliant or a DOS-compliant keyboard template. If they use the DOS template, users will face a hurdle in learning Windows, as they will have to remember two sets of keyboard commands.

The WordPerfect keyboard template is totally incompatible with the normal Windows Common User Access. For example, ALT-F4 normally closes a Windows application, while in

WordPerfect, the same keystroke turns on the Select function.

If you choose instead to start fresh with a single-vendor suite of applications — such as Microsoft's Office, Lotus' SmartSuite or Borland International, Inc.'s Office for Windows — you're bound to get applications without a DOS counterpart, such as Excel (which ships with Office) or Ami Pro (which ships with SmartSuite).

You *can* throw out the unfamiliar application and purchase the Windows version of your DOS spreadsheet; however, some of your users will likely start using the ones contained in the software suite. This will further complicate matters, as you will have to support two programs in Windows, not to mention ongoing DOS support during the transition period.

Shopping price. It would seem that the best deal is to purchase a suite of applications from a single vendor. Obviously, you get more applications for your money (see story page 118).

But to make that cost justification work, a majority of your employees really have to use all of the applications contained in the software suite. If you're paying for a graphics package, E-mail and database systems that aren't going to be used, then the purchase isn't justified.

Also, be certain to shop around for discounts. Large account resellers, such as CompUSA, have arrangements with large vendors to sell software at the same price as the manufacturer when a large quantity is being purchased. Discounts can be as steep as 60%, with quantities in the neighborhood of 2,000 to 5,000 units sold over a 12-month period.

Don't forget to investigate the pricing for upgrading from your DOS applications. Most vendors offer competitive upgrades for about 50% off the regular price.

The challenge of accessing legacy data. Most people will need to consider accessing legacy data through a Windows database, especially mainframe databases. Neither Borland's Paradox nor Microsoft's Access can access enterprisewide databases such as IBM's DB2, although both can access databases residing on local-area network servers.

Even Windows databases that can access legacy data — such as DataEase International, Inc.'s DataEase and Approach Software Corp.'s Approach — require a third-party package to make the connection. The prices on such packages are high, starting at about $35,000.

E-mail is certainly an additional source of enterprise data. Microsoft's Mail and Lotus' CC:Mail work across multiple platforms such as Unix, IBM's OS/2 and Apple Computer, Inc.'s Macintosh, but what about connectivity to IBM's Professional Office System or Digital Equipment Corp.'s All-In-1? Once again, this is an additional cost to factor in when moving into the Windows environment on an enterprisewide basis.

Ensuring good support. Support is a huge area of concern for Windows users. Because vendor support can vary widely, take the time to call the support lines of all vendors whose Windows packages are under consideration. See how long it takes to get through to the support line and how fast they get you an answer.

Other than WordPerfect, which has an 800 number for support, you will usually bear the cost of the support call. Also, if you've gone for the "best of breed" instead of a software suite, you may have to deal with several companies, each with differing policies, for support.

If that's the case, it's best to set up a help desk to be the sole source for internal support and the only authorized vendor contact for external support. Otherwise, you could have 500 or even 5,000 people calling vendors with similar problems. This would run up phone expenses and waste company time.

These are just five issues. During your transition to Windows, you will encounter many

Buying smart, *page 118*

Windows is cheaper if you upgrade DOS software. Vendors usually offer upgrades for 50% off the regular cost.

What is OLE *anyway?*

■ **Object Linking and Embedding (OLE)** lets users create an object — a chart, a sound byte, an illustration — in one application and then export the object and edit it within other applications. Currently OLE 2.0 is an application programming interface that older applications can't take advantage of. Eventually, OLE functionality will be built into Microsoft's future-generation operating systems so that all applications that run under the Cairo operating system (the follow-up to Windows NT) will have access to OLE services.

What's the difference between 'linking' and 'embedding'?

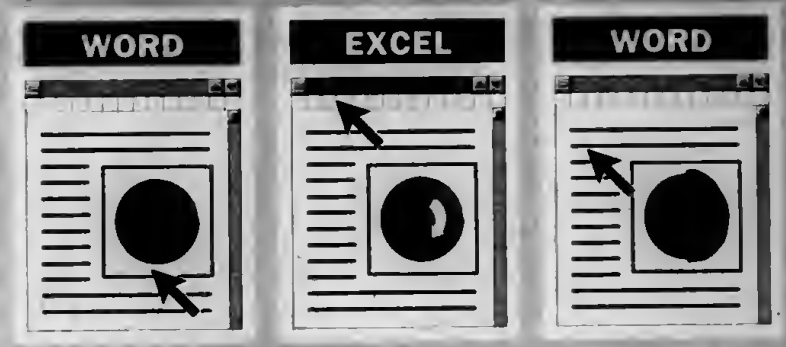
A 'Linking' is a more limited implementation of the 'embedding' function diagrammed at right. A linked object maintains live links to the applications that created it but cannot be edited within the document. To change the data, the user must switch windows and open the application in which the object was created.

What else does OLE 2.0 do?

A Automation allows one application to control another. For example, a user can input data to a word processor and, through OLE links, send the data to a charting program engine, which would create a flowchart and return it to a document.

A 'Drag and drop' lets users move embedded objects from one document or application to another.

HOW MICROSOFT'S OLE 2.0 WORKS



1. Salesman Bob is working on his first-quarter market share report, using Microsoft's Word or any Windows word processor. At some point, he needs to update a chart showing market share. He double clicks on the chart.

OLE recognizes the chart as an embedded 'object' that was created in Bob's Excel (or any Windows-based) spreadsheet. OLE calls up the functions needed to edit the chart.

2. The Word menus are replaced by Excel spreadsheet menus. The Word document remains onscreen, but Bob makes the appropriate changes in the chart data using the Excel menus. This is not quite the same as opening the full Excel application because not all of the spreadsheet's functionality is available through OLE. However, Bob can change the numbers to update his pie chart and perform other basic edits.

3. When he's finished, he clicks on the document anywhere outside of the chart. OLE saves the changes and closes the Excel menus. The word processor returns to the foreground.

Bob has changed his market share chart without ever closing or leaving the sales report window. Now he can continue to edit the text of his document using the Word menus as before.

THE KITCHEN SINK IS

If you're getting the feeling the T4500 series represents a new standard in business notebook computing, you're right.

Our T4500C features an LCD TFT active matrix color screen that can display a kaleidoscope of 256 simultaneous colors from a palette of 185,193. Our T4500 offers a large, bright, easy-to-read 9.5" VGA display with 640 x 480 resolution and 17:1 contrast ratio.

A 150-pin expansion port lets you attach a SCSI adapter to the notebook. Or lets you attach the notebook to our Desk Station IV, providing true desktop capabilities in your office.

System control hotkeys save time by allowing you to quickly change your display setting, power management, security status, etc., without having to call up menus.

A generous 4MB RAM standard, expandable to 20MB.

Our award-winning keyboard features standard-sized keys and key spacing.

The T4500 series' advanced 20MHz i486™SX processor makes any 386 seem like a tortoise. In fact, tests reveal it's up to two and a half times faster than many 386-based notebooks.

The T4500C comes with a 120MB hard drive and our T4500 comes with a choice of an 80MB or 120MB hard drive.

3.3-volt chip technology decreases power drain by as much as 25%, while adding up to 27% more battery life.



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INTRODUCING THE TOSHIBA

OPTIONAL.

The T4500C's dimensions: 11.7"Wx8.3"Dx2.0"H.
The T4500's dimensions: 11.7"Wx8.3"Dx1.8"H.
Both fit into half of a briefcase.

Windows® 3.1 and DOS® 5.0 with Ultrafont™ come pre-installed.

AutoResume lets you start where you left off without rebooting and automatically saves your material when you turn the power off.

Our Quick Charge capabilities allow you to charge the battery while you're working.

Featuring AutoResume, AutoSave, Advanced Power Management, and CPU Sleep Mode, our MaxTime™ power management system helps you get the maximum out of every battery charge.

Quickread LCD status icons allow you to check a host of functions (including remaining battery time, keyboard status, and power-saving mode) at a glance.

An industry-standard PCMCIA 2.0 slot accepts removable hard drives, data/fax modems, network adapters, and other expansion options.

The BallPoint™ mouse connects directly to the computer through a unique "one touch" QuickPort, so there's no cord to get in your way.

A front-loading floppy drive provides easy access.

Both the T4500 and the T4500C weigh in at about 6.5 lbs.



The T4500 features a large, easy-to-read 9.5" monochrome screen.



Tests reveal that the 3.3-volt 20MHz i486™SX processor is up to two and a half times faster than many 386-based notebooks.



You can call real-live Toshiba technicians toll-free for complete product support.

intel inside

T4500 SERIES.

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TOSHIBA
1-800-457-7777

Taking a LOOK *at suites*

THE FIRST SUITE

■ Microsoft's Office for the Apple Macintosh in 1988.

WHO SHOULD CONSIDER SUITES

■ Corporations and small to medium-size businesses.

HOW SUITES ARE SELLING

■ Suites account for 40% of the sales of Microsoft's Word and Excel. They account for 20% of the sales of Lotus' 1-2-3 for Windows, Ami Pro and Freelance.

PRIMARY ADVANTAGES

COST

■ Three to five applications are bundled and sold for the normal purchase price of two.

SUPPORT

■ Obtaining enterprisewide support from a single vendor is more sensible than trying to integrate a variety of packages from multiple vendors. In fact, corporations can leverage their relationship with a software vendor by pushing for lower cost site licenses and network licenses while simultaneously requesting additional software features based on the scale of the corporation's present and future licenses.

PRIMARY DISADVANTAGES

■ If you don't need all the applications that are bundled, you could be wasting money. Consider that the current street price for either Microsoft's Office or Lotus' SmartSuite is approximately $350. The competitive upgrade price for these companies' word processors and spreadsheets is about $120 apiece. So if your corporation requires only word processing and spreadsheet applications, that totals $240, a savings of $110 per employee below the cost of a suite.



Reese Lyman

There's more to it than four products in one.

THE INS AND OUTS OF THE CHOICES

PERSONAL INFORMATION MANAGERS

■ Lotus is the only suite with a personal information manager.

DATABASES

■ Borland offers a Windows databases in its suite. Microsoft makes one available for $199. Lotus has no database component.

E-MAIL

■ Microsoft and Lotus bundle E-mail and graphics packages in their suites. Borland's Office doesn't. Lotus' E-mail package is the only one to support Unix and OS/2 platforms.

COMMONALITY AMONG APPLICATIONS

■ There is no commonality in the Borland suite between WordPerfect and the Borland applications, other than the fact that they are all Windows applications.

On the other hand, the use of SmartIcons in Lotus' SmartSuite and customizable tool bars in Microsoft's Office creates a very cohesive look and feel to the applications contained in the suites.

INTEGRATION AMONG APPLICATIONS

■ Microsoft and Lotus have gone to considerable lengths to incorporate prewritten macros within their suites to provide a common ease of use in exchanging data across their packages. As users become more comfortable writing their own macros, they can mold the applications to fit their work methods rather than adapting their work methods to fit the Windows applications.

WordPerfect and Borland, on the other hand, contain entirely different macro languages within their applications that prohibit the type of application synergy that Lotus and Microsoft have attained.

GRAPHICS PACKAGES

■ The inclusion of graphics packages in the Lotus and Microsoft suites is often a decision point as to whether to buy a suite or separate applications. If your organization doesn't need the graphics applications, there may not be a cost-justification for purchasing one.

Conversely, this might be a negotiating point for getting a vendor to lower its pricing on a quantity purchase.

THE THREE MAJOR SUITES	WORD PROCESSOR	SPREADSHEET	DATABASE	E-MAIL	GRAPHICS	PERSONAL INFORMATION MANAGER
Microsoft's Office ($750)*	Word	Excel	Access**	Mail	Powerpoint	NA
Lotus' SmartSuite ($795)*	Ami Pro	1-2-3 for Windows	NA	CC:Mail	Freelance	Organizer
Borland's Office for Windows ($595)*	WordPerfect for Windows	Quattro Pro	Paradox	NA	NA	NA

* Retail ** For an additional charge of $199

Continued from page 115

more. For example, your staff is going to demand faster PCs when they find out how slow Windows programs are compared with DOS word processors.

There are also future issues to deal with. Windows NT will bring in true 32-bit applications, which run much faster and increase productivity. Sybase, Inc.'s SQL Server for Windows NT will bring object-oriented database manipulation to both Windows 3.1 and Windows NT users. Windows NT Advanced Server introduces to networking a new level of security, network services and other features that are beyond anything currently on the market. •

Dripps is a Prairie Village, Kan.-based consultant specializing in Windows computing, client/server and CASE.

If you choose software from several vendors, set up a help desk as your single support source.

TAKE THIS QUIZ

■ Have you factored in the costs of converting legacy data to the formats of your selected Microsoft Windows applications?

■ Has a hardware inventory been completed to establish the costs of additional hardware upgrades in order to run Windows?

■ Is a training program planned or in place to ease users into effectively using the Windows environment?

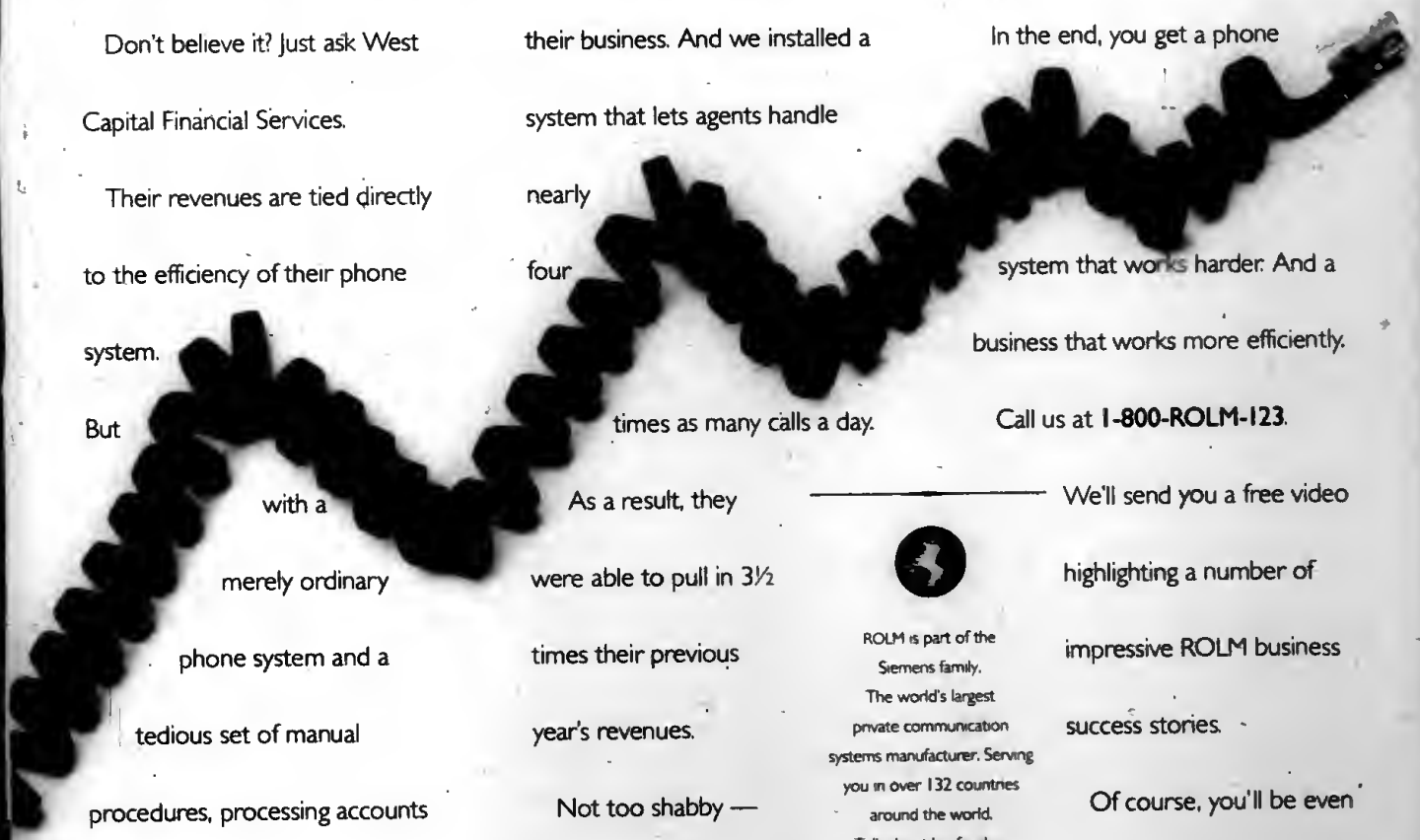
■ Has an individual or group been designated to maintain a help desk to maximize internal support while limiting vendor contact?

■ Is a plan in place for distributing software within the organization without inviting employee software piracy?

■ Has your company considered using the software over networks, instead of installing it on individual desktop PCs?

But really, how much impact can a phone system have on a company's revenues?

How's 357% grab you?



Don't believe it? Just ask West Capital Financial Services.

Their revenues are tied directly to the efficiency of their phone system.

But with a merely ordinary phone system and a tedious set of manual procedures, processing accounts was painfully slow-going.

They knew there had to be a better way. So they called ROLM.

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Common Windows questions

From networking to development tools to Windows NT, there's a lot of ground to cover in learning about the Microsoft Corp. Windows environment. We asked Noah Ross, director of technology at Cap Gemini America, Inc., a New York-based information consulting and services company, and Michael A. Browning, a senior manager of information engineering and advance technologies at the firm, to elaborate on some of the questions users ask most.

Q. How can we optimize our Windows environment?

A. There are lots of things you can do without spending a cent. Here's a few tips:

- Throw out Smartdrive. It may be slowing down your system.
- Speed up your bus. Most BIOS are preset to some multiple of the clock speed.
- Use your advanced BIOS setup to increase the speed. Find the highest speed that still supports all your peripherals.
- Use a permanent Swap File instead of the preset Windows temporary one. You can change this in the Virtual Memory section of the Windows Control Panel.
- Use 32-bit disk access. If you have an IDE controller, you can set this in the Windows Control Panel. This can really help your disk I/O.
- Don't use Wallpaper. It looks pretty, but it takes up a lot of valuable memory.
- Remove unused fonts. They take up a lot of space.

Q. What software do I need to make Windows a networked environment?

A. It depends on the protocols you intend to use. Environments with several protocols may need several products. Microsoft's Windows for Workgroups is a good product for working with Novell, Inc. and NetBIOS networks.

If you use Transmission Control Protocol/Internet Protocol or Network File System, Netmanage, Inc.'s Chameleon is a good choice. Other users may prefer FTP Software, Inc.'s PC/TCP or Wollongong Group, Inc.'s Pathway, among others.

One nice feature of Windows for Workgroups is that it allows each workstation to function as a server, which gives you a lot of flexibility in sharing data and printers.

You'll need software for network administrative tasks, too.

Q. How do I plan for Windows NT?

A. NT is going to be a major part of any future Windows enterprise configuration, especially as a server. Sybase, Inc.'s SQL Server for Windows NT is already positioned to take advantage of NT's advanced features. Oracle Corp.'s Oracle 7, Cincom Systems, Inc.'s Supra 3 and others promise similar functionality.

Windows NT promises to provide a new network standard for Windows computing. Whether this will displace Novell's NetWare remains to be seen, but Novell is understandably concerned.

It makes a lot of sense to keep your options open when looking at software and hardware. Look for applications that plan to support NT's functionality in the future.

When NT is released, as with any new operating system, it probably will not be used immediately to support critical business applications. Most shops will probably "play" with it for a while with noncritical applications until they develop confidence. Don't expect to see critical systems on Windows NT until next year or later.

Q. What about Windows 4.0?

A. Windows NT is not going to fit on most desktops; it is just too heavy for nonpower users (you'll need 16M bytes and 200M bytes or more disk.) However, preemptive multitasking and 32-bit applications will be a "must" for network clients. This will be the place for Windows 4.0 or an "NT Lite." •



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Face to Face

Microsoft's chairman sees Windows NT rolling over Unix on the desktop and giving NetWare a run for its money

Q. You've said that Windows NT would outsell Unix by a factor of 5-to-1.0 in its first year. Are you still standing by that?

A. Understand that Unix is many different things. You have to write for a particular form of Unix. I said we'd sell a million [copies of Windows NT] in the first 12 months, which is about five times the most popular form of Unix.

To application developers who have written software for high-end systems, NT is big news because it allows volume developers to be profitable. Windows NT gives them the best of the PC, the workstation and the network operating system. in everything that's going on in computing — the GUIs, the great tools and Sun acknowledging that the Windows API is the mainstream — there's a clear message that people can build their apps on Windows and not run out of room.

Q. Looking out a couple of years, what will be the market share of Unix vs. OS/2 vs. Windows NT?

A. What's volume today? Nothing you mentioned. What sells in volume are DOS, Windows, Mac and NetWare. So you're talking very small numbers.

Hey, I can snap my fingers and generate a million units of NT through pricing to OEMs. If people want numbers, we can give them numbers.

But we want to be sure people understand [what they're buying]. We're telling OEMs they should bundle Windows NT only in the very high-end systems and servers.

The question is, which APIs will be mainstream? As these operating systems try to be clones of Windows, you could have everything written to Windows and still have volume. It depends on who's doing the best implementation of Windows, and we're confident we'll do that.

Q. Why should Windows NT become a contender in the network operating system market?

A. Out of the box, it has everything that you get in NetWare v3.11. So Windows NT is enough for 60% of the volume that Novell does. When you get into multiserver networks, we're competitive there with Windows NT Advanced Server. We're going to make that available for a lot less than people have expected in the past and include a lot of extra features, like Mac support and dial-in capabilities.

The big numbers will be in application servers. NetWare is not a good application server platform. That's why we've built SPX/IPX and other communications protocols into all our Windows products. People can just use Windows, and for their large networks where they've already got NetWare, they just bring in NT servers as application servers.

Q. How will Windows NT break down by desktop vs. server sales?

A. It's a little less black and white than before, when there was a lot of difference between the desktop and the server. But I'd say, because desktops are so numerous, that NT will be sold one quarter on the server and three quarters on the high-end desktop.

Q. Will Taligent [the joint operating system project between IBM and Apple Computer, Inc.] be much of an issue?

A. I don't know. Have you seen any good Taligent applications? Have you seen a lot of start-up companies focused on Taligent? Do you know what a Taligent application does that a normal application doesn't?

Let's say a Taligent application does something. Some smart guy is going to come along and decide he can make that happen on Windows and have an installed base of 100 million to sell to instead of zero. There must be something magical going on in your head to say, "Let's start over on operating systems."

Yes, object orientation is valuable. It lets you structure information better and write interfaces better, but all that stuff is

Bill Gates, *page 127*



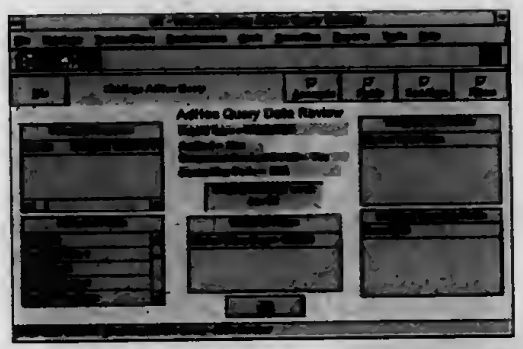
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Bill Gates

CONTINUED FROM PAGE 123

evolving in Windows at least at the pace at which people can absorb the concepts.

Q. How would you describe your relationship with corporate information systems?

A. That has to be put in the framework that the industry is restructuring from top-to-bottom suppliers to [a structure] in which companies specialize in processors or software. When people pick Microsoft, they like our financial stability, our long-term approach, our willingness to share our vision and the way we've got the software industry to build on a common platform.

They've had a dilemma in the past where their high-volume applications didn't fit in with their high-end platforms, and now we're saying because of Windows NT, there's no dilemma. Just go for it.

"Some [people] are looking for someone to do for them what IBM did. We never will have that kind of role. Can one company be on top of [everything]? No way!"

We do have a large group of people to talk to these companies. But some of them are looking for someone to do for them what IBM did. We never will have that kind of role.

Q. Has that role become unimportant?

A. It can't exist because the technology is moving too fast. Tools, disks, operating systems, instruction sets, databases, chips — can one company be on top of all of those things? No way! So once the industry has gone into this form, it won't go back. You still have systems integrators who'll assemble those pieces. But if you're in a business where information processing is crucial, you'll want your own employees to get involved in these things.

Q. You were quoted recently as saying power is coming back to the data center. Why do you think that's happening?

A. I don't know that it ever went away. It's an important thing in a corporation, of "How do you store your information?" and "Where is it physically located?" Because we're trying to leverage the structure of existing networks to make it easy to browse those database management systems, the productivity application world and the data center world are not separate anymore.

There are still large economies of scale in storage costs and administration of looking over that data, and particularly as fiber brings communications costs down, you'll be able to pool a lot of data in one place.

But you'll still have these big data centers. Inside them will be microprocessor-based systems running Windows NT, but they will be data centers.

Q. Do you have a sense that object-oriented will catch on as a new way of doing things?

A. The only trick in software is to use code that's already been written. Object orientation is just a development technique. Yes, all the new tools are object-oriented, and good companies should factor in objects as they write code. There's more C++ code written at Microsoft than anywhere else on the planet. But the idea that there's something magical about it really bothers me. Anybody who's been in the computer industry more than five years has seen these things come and go 10 times.

For example, we're closing all our warehouses in Europe to move to a single warehouse. It's very complicated because of currency requirements and such.

So we're writing this new application, and no one is saying, "Oh, this is so easy — it's object-oriented. No problem." What a bunch of BS. Hey, 90% of the application has to do with the complexity of the issues you're dealing with and not some goo.

So, yes, object orientation is super important, [but] 80% of the [work] is still going to be brainstorming what the application should look like. So most of the people who write Cobol today won't be writing a lot of code. They'll be doing visual [prototype] applications and providing pieces for the coders.

Q. What would you do to fix IBM now?

A. I feel sorry for Lou [Gerstner]. We'll all armchair the guy to death. The closed, account-oriented strategy that IBM pursued so successfully is not a model to use moving forward. What business to split off is a very tough question.

My personal view is, take the consulting business and spin that off. I think the AS/400 business, with a separate operating system and separate, independent developer — there's no reason they should be burdened with that combined sales force. They should probably bring in some smart managers and let that business go off on its own.

But they've still got chips, PCs, workstations, mainframes and research, and there are reasonably deep synergies there. The simple thing is to say you should break them all out, but I wouldn't jump to that conclusion because maybe the next-generation microprocessor is the basis for a next-generation mainframe. Maybe they will also get their act together on networking, but it's awfully late for them to do that.

Q. If IBM had come to you 12 years ago and insisted on an exclusive license to MS-DOS, would you have signed it?

A. Are you kidding? No, absolutely not. We could have taken any hardware model and convinced other hardware manufacturers to use it as a standard. There were 42 different types of PC designs when MS-DOS was first shipped. It dropped to two. Why? Because we got the phenomenon of the more volume you get, the more software you get. We convinced IBM to use one of the first 16-bit chips, and there was this model from the mainframe world cloning IBM, so that's what we talked to Compaq and Columbia and others about doing.

We would have been glad at sometime to sell IBM part of the company. We even proposed to IBM that they buy part of Microsoft — I think it was 30% — and they turned us down. At every stage of our relationship, they had project groups doing work to wipe us out. We stayed ahead, but it wasn't simple. •

Interview conducted by executive editor Paul Gillin and technical editor Charles Babcock.

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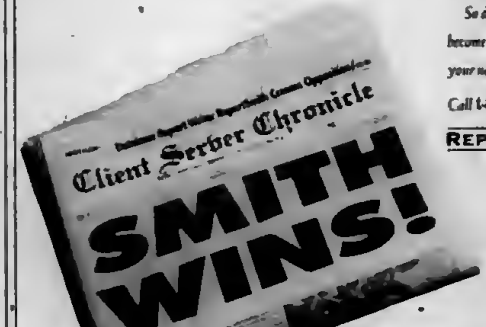
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Testing the BEST

Excel's tools, Quattro Pro's value garner most user satisfaction

By Derek Slater

Microsoft Corp. has had more time than any other player to work out the kinks in its spreadsheet, having been the first to offer a product such as Excel to the Windows market. That edge helped the product eke out a narrow first-place margin in the Buyers' Scorecard, in which users of the three leading Windows spreadsheets rated their products.

Microsoft's Excel topped Borland International, Inc.'s Quattro Pro by a point, 79 to 78, for the highest overall satisfaction score. Traditional spreadsheet kingpin Lotus Development Corp.'s 1-2-3 for Windows scored 74, four points behind Quattro Pro. Because Release 4.0 was just announced, this survey rated the prior version of Lotus 1-2-3 for Windows.

COMPUTERWORLD BUYERS' SCORECARD

The response base, 50 users for each product, included a mix of both end users and information systems professionals supporting multiple copies. Approximately 30% of the respondents held IS manager or director titles. The balance were programmer/analysts or end users of the spreadsheets.

Excel is the longtime market share leader. It still holds more than 60% of the Windows market, according to BIS Strategic Decisions in Norwell, Mass.

But Quattro Pro and 1-2-3 for Windows are expected to gain share as the products mature.

The survey indicates that Excel will not easily give up its devotees. It received higher satisfaction grades than the other products in overall quality, ease of use and performance.

The product's highest individual rating area was formulas and calculation tools. Key unique features of the product include drag-and-drop cell movement and several automatic formatting and filing commands. Excel also has six customizable tool bars (separate bars for formatting, drawing, charting and so forth).



Excel received its lowest scores in macro language capabilities — a strong category for Borland's Quattro Pro — and browsers.

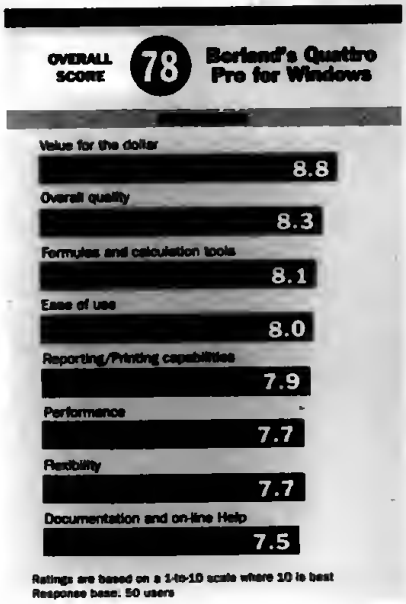
Quattro Pro also achieved higher ratings in its ability to handle graphics elements.

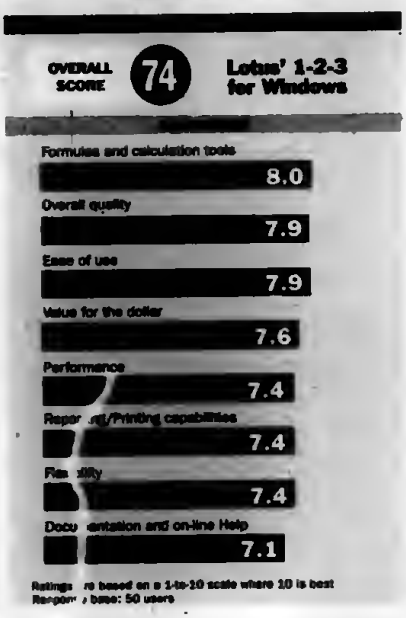
The product has strong support for three-dimensional worksheets and graphs and actually integrates much of the functionality of presentation graphics programs, including a slide-show feature.

Quattro Pro users indicated they were less happy with their vendor's service and support; the product's lowest satisfaction rating came in that area.

Overall, Lotus' 1-2-3 for Windows received lower ratings than its rivals in most categories. But it earned its highest scores in categories users say count: overall quality and ease of use. The product's weakest areas were its macro language, along with Microsoft, and use of the Windows interface. Die-hard DOS spreadsheet users can open a "classic" menu mode that lets them use the same slash-key menus and commands under Windows. •


OVERALL SCORE 79
Microsoft's Excel
Formulas and calculation tools 8.6
Overall quality 8.5
Reporting/Printing capabilities 8.3
Performance 8.2
Ease of use 8.1
Value for the dollar 8.1
Flexibility 7.9
Documentation and on-line Help 7.8
Ratings are based on a 1-to-10 scale where 10 is best
Response base: 50 users


OVERALL SCORE 78
Borland's Quattro Pro for Windows
Value for the dollar 8.8
Overall quality 8.3
Formulas and calculation tools 8.1
Ease of use 8.0
Reporting/Printing capabilities 7.9
Performance 7.7
Flexibility 7.7
Documentation and on-line Help 7.5
Ratings are based on a 1-to-10 scale where 10 is best
Response base: 50 users


OVERALL SCORE 74
Lotus' 1-2-3 for Windows
Formulas and calculation tools 8.0
Overall quality 7.9
Ease of use 7.9
Value for the dollar 7.6
Performance 7.4
Reporting/Printing capabilities 7.4
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Ami Pro's quality, Word's editing, WordPerfect's service earn praise

By Derek Slater

Competitioo in the word processing market can be particularly cutthroat. In the Buyers' Scorecard user poll of the leading Windows-based word processors, Lotus Development Corp.'s Ami Pro and Microsoft Corp.'s Wnrd fnr Windows finished oeck and oeck, with Ami Pro squeaking out a narrow victory in overall satisfactinn.

WordPerfect Corp.'s WordPerfect for Windows placed with a 76 overall score, compared with 80 for Ami Pro and 79 for Wnrd fnr Windows. Fifty users of each product responded, including infnrmation systems management and end users.

Ami Pro earned the highest satisfactinn score in the three categories users say they consider most crucial: overall quality, ease of use and performance. Some nf its other strengths include the ability to preview a documeot nr style sheet before opeoing it and the ability to access integrated graphing and drawing tools.

Users can edit charts in the same window as text. Ami Pro makes extensive use nf icon bar menus, and the right mouse buttoo hrings up a menu nf commonly used functinns.

On the other hand, Ami Pro received lower ratings than either of its competitors in documentatinn and on-line Help and in service and support.

Ami Pro runs only nnder Windows. Version 3.0, released last year, is priced at $495. The product has gained a greater share in the Windows market during the past three years with the help nf Lotus' marketing. Lotus acquired Ami Pro's devetoper, Samna Corp., in 1990.

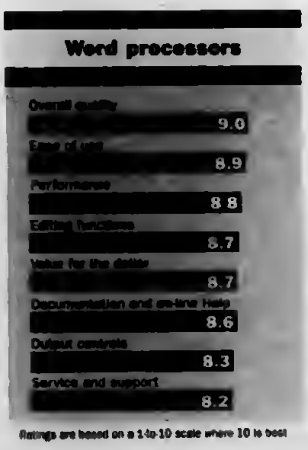
Micrnsoft's Word for Windows, which nnce had the Windows market largely to itself, scored higher than its competitors in editing capabilities and documentation. Users also rated the Microsoft product highly in its use of the Windows interface and Windows functions such as Dynamic Data Exchange. It fared less welt in long document handling and trailed slightly behind the other two products in value for the dnllar.

Like the nther word processors in the survey, Microsoft's Word fnr Windows costs $495. Microsoft Word held roughly a 46% share of the total $1.7 hillion 1992 word processing market (including both DOS and Windows sales), according to Dataquest, inc. Word's overall market share has increased dramatically with the rise of Windows.

Microsoft recently announced that the next version of Word fnr Windows will support ObjectBasic, a common macro language that the company is devetoping for all its applications.

The Windows version of WordPerfect reached the marketplace well after the other two products. In the user survey, the WordPerfect entry distinguished itself in vendor service and support, earning the highest satisfactinn score in that area by a wide margin. It also nutscored its rivals in its ability to handle long documents.

In most nther areas, though, user satisfaction with WordPerfect fnr Windows was lower than for the other two products. Particular weaknesses were the vendnr's use nf the Windows interface and its control over printing functions. Version 5.2, released early this year, rectifies the first version's lack of full support for Windows functions such as Object Linking and Embedding and also nffers a QuickFinder text-retrieval feature the other products lack.



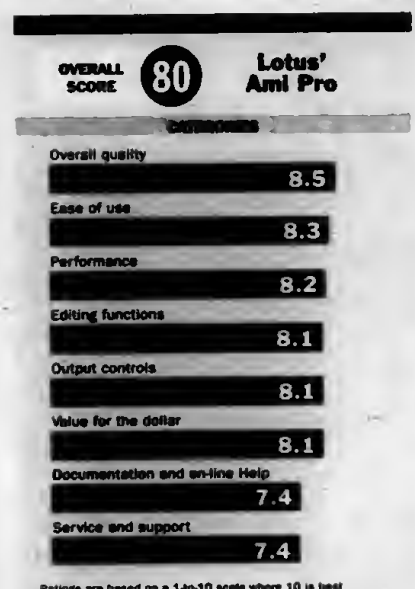
Ratings are based on a 1-to-10 scale where 10 is best

The WordPerfect for Windows package also includes Reference Software International, inc.'s Grammatik 5 grammar checking program, although it is not integrated into the word processor, as are grammar functions in Ami Pro and Word.

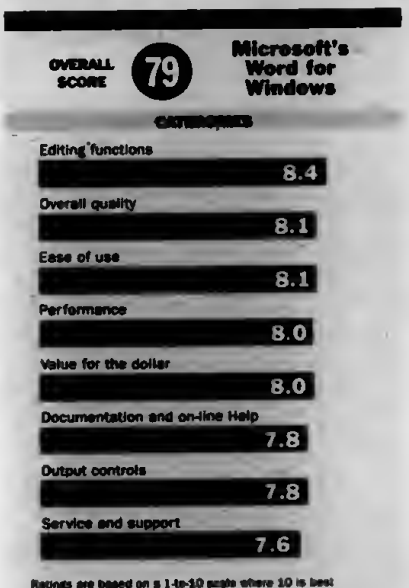
WordPerfect for Windows is not likely tn match the runaway market share lead nf its DOS counterpart. In an effort to compete with Microsoft's Office and Lotus' SmartSuite application hundles, WordPerfect recently announced a deal to package WordPerfect for Windows with database and spreadsheet prodncts from Borland international, Inc. at a steeply discounted, 90-day introductory price of $399.99. The version of WordPerfect in Borland's Office fnr Windows suite is slightly modified to provide greater integration with the Quattro Pro spreadsheet.

After the 90-day period, the suite will cost $595.

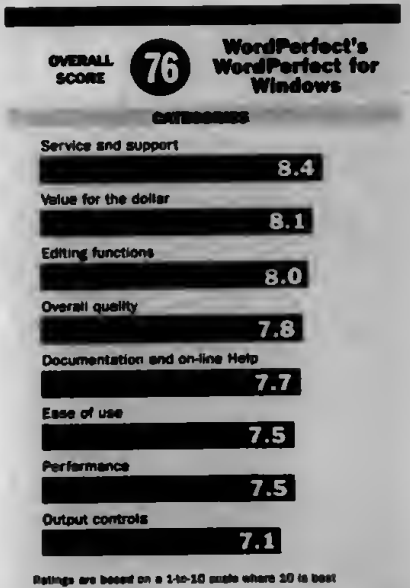
Microsoft's Office costs $795, and Lotus' SmartSuite costs $750; both prices include business graphics and electronic-mail software packages but lack databases (although Microsoft's Office users can incorporate the company's Access database at an additional cost). •



Ratings are based on a 1-to-10 scale where 10 is best
Response base: 50 users



Ratings are based on a 1-to-10 scale where 10 is best
Response base: 50 users



Ratings are based on a 1-to-10 scale where 10 is best
Response base: 50 users

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Vendors hit the mark

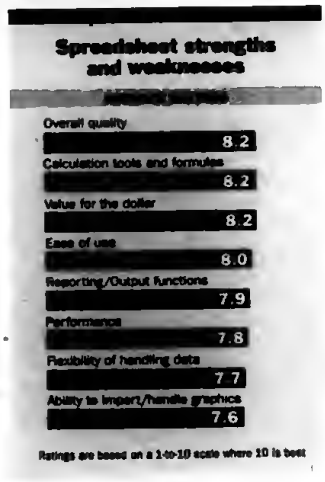
Spreadsheet vendors are focusing their efforts in the right place, according to the Buyers' Scorecard results: Users said they are pleased with their products in key areas, finding room for improvement only in the categories they're less concerned about.

The leading spreadsheets earned an average score of 8.0 or above in four areas: overall quality, ease of use, value for the dollar and calculation tools.

Windows spreadsheet sales equaled almost exactly half of the $1.5 billion 1992 worldwide spreadsheet market, according to Dataquest, Inc.

Because Lotus' 1-2-3 and Borland's Quattro Pro have been available for a relatively short time, that percentage should rise as the products mature.

Matching the spreadsheet results against the satisfaction ratings for word processors yields interesting comparisons. Spreadsheets scored much higher than word processors in their handling of the Windows interface but roughly the same in ease of use. Spreadsheet developers have gone out of their way to make it easy for DOS users to transition to Windows (particularly from Lotus' 1-2-3) by incorporating similar menus. •



Speed not a problem

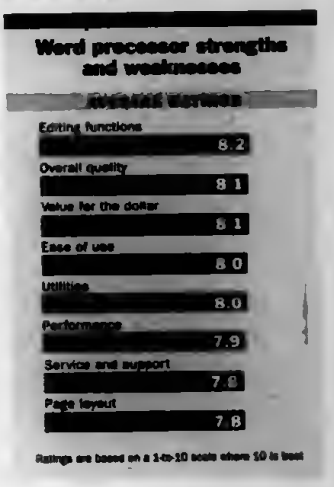
If word processor users had their way, these products would deal better with long documents. Their performance, however, is fine, at least according to Buyers' Scorecard respondents.

Categories that garnered an average rating of 8.0 or above included editing functions, overall quality, value for the dollar and utilities. The utilities category included features such as mail merge, fax support, spell checker and dictionary functions. The word processing products scored highest in areas that were most important to users.

Some experts have questioned the wisdom of running word processors on the Windows platform, given the environment's tendency to slow down functions; however, users indicated that speed was not a big problem.

Where they did find room for improvement was in the word processors' ability to take advantage of Windows functions such as Dynamic Data Exchange and Multiple Document Interface.

According to Dataquest, Inc. in San Jose, Calif., Windows-based word processor sales raked in $1.1 billion in revenue in 1992, out of a total of $1.7 billion spent on all platforms. •



METHODOLOGY

Products included in the Buyers' Scorecard are the market share leaders among Windows-based word processors and spreadsheets. First Market Research Corp., an independent market research company in Austin, Texas, conducted the survey and tabulated the results.

Computerworld thanks the following firms for their help in preparing this survey: *Computerworld* Database Division and Dataquest, Inc.

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Paradox suffers from compatibility conflicts in face-off with Access

DATABASE FACE-OFF

PARADOX FOR WINDOWS users balk at the major rewrite Borland has applied to this first non-DOS version of the product. Particularly difficult issues are adapting old Paradox applications to the new environment and getting familiar with the new object-oriented programming language.

ACCESS benefits from having no previous versions, and the product is viewed by users as very easy to get up and running but lacking in sophisticated programming capabilities. Users were also less satisfied with technical support and performance for both Windows DBMSs.

In the battle for Windows database management systems supremacy, the two primary contenders have come out with new releases that compete head-to-head on numerous features.

But user evaluations of the products reveal significant differences. While Borland International, Inc.'s Paradox for Windows stretches Windows' functionality and challenges programmers with object-oriented tools, Microsoft Corp.'s Access relies on Basic and offers more for end users than developers.

Four users of each product gave their evaluations in *Computerworld*'s Firing Line teleconference. The format was developed with assistance from Howard Rubin Associates, Inc. and Technology Investment Strategies Corp.

Reliability

Because both products are the first Windows databases from the vendors, users said they expected to find problems in their execution. But only one Access user reported problems, and Paradox users said the product was even more stable than DOS versions.

Consultant: "I have been a little bit disturbed by Access freezing. It's not as stable as I would like to have it."

Performance

The combination of databases with extensive memory requirements and Windows' own graphical features causes these databases to be much slower than their DOS competitors. But none of the users expected anything different.

Insurance company: "Compared to Paradox 4.0, it takes Paradox for Windows three to four times as long to do something."

Bank: "I don't think anyone in his right mind would choose a Windows-based database if speed were the main criterion. In Paradox, nothing is optimized. They really devoted all their time to make it not blow up."

Entertainment firm: "I would like to see Paradox tweaked a little bit. Drawing a screen, especially with bit maps, is very sluggish."

Consultant: "Access isn't as fast as it looks at first. It presents a quick representation of the table, but when you realize what it's doing behind the scenes, it's slower than third-party products."

Ease of use

Both vendors have taken pains to make common functions extremely easy to accomplish. But complicated programs for customized applications are difficult. Access has an edge in offering more features in the tool bar menu.

Bank: "Paradox for Windows was extremely easy to use at first. But there were some things I couldn't figure out how to do at all. I tried to create a fairly complex form using four table relationships, and I only wanted to present the user with two of the rows and columns. After playing around with it for a couple of days, I gave up and wrote it in Paradox 4.0."

Consultant: "Access is real easy for end users. Once you start programming, there are some things that are not so easy to use such as the database structure."

Technical support

Neither vendor received raves about service and support. Users were unhappy about long waits when calling the support line, and alternative online means were no more satisfactory. But the users all expected to have these problems.

Bank: "For Access, the technical support line was completely jammed. I finally did get through. I was doing some fancy stuff with a report and the wait was a hassle."

Entertainment firm: "For application development, the Borland support was almost impossible to get through to, so I used CompuServe. Even that seems overburdened at times. A lot of times I know more about the product than the person I'm dealing with."

Ease of installation

Everything went as expected for both products. The only complaint was the memory requirement. Paradox for Windows consumed 17M bytes. Access digested 12M bytes.

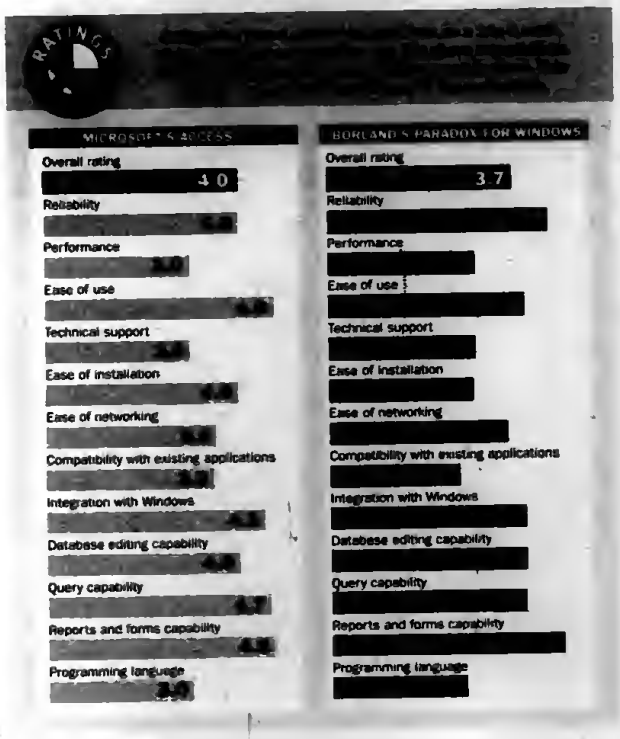
Ease of networking

Paradox for Windows users said record- and form-locking have improved, making network configurations easier. Access users had no problems with the networking features.

Entertainment firm: "Setting up a network in Paradox is messier than it needs to be. The Windows executables and [Dynamic Link Libraries] are read-only, so a network installer needs certain access to do that."

Compatibility with existing applications

This was a major issue for Paradox users, as the Windows version allows only tables from the previous version to be converted. All forms and reports must be rewritten, and the programming language is totally different. Access users didn't have previous applications to port and with the exception of transferring some dBase files, they



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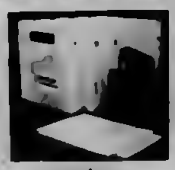
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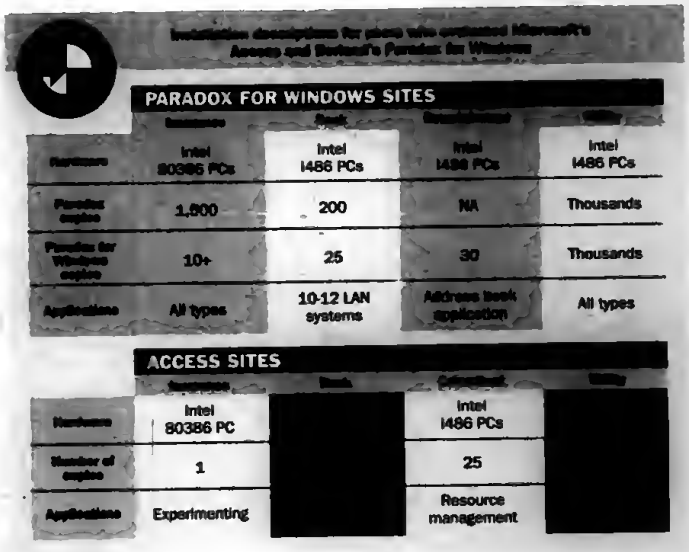
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Installation descriptions for users who evaluated Microsoft's Access and Borland's Paradox for Windows

PARADOX FOR WINDOWS SITES

	Insurance	Bank	Entertainment	Utility
Hardware	Intel 80386 PCs	Intel I486 PCs	Intel I486 PCs	Intel I486 PCs
Paradox copies	1,800	200	NA	Thousands
Paradox for Windows copies	10+	25	30	Thousands
Applications	All types	10-12 LAN systems	Address book application	All types

ACCESS SITES

	Insurance	Bank	Entertainment	Utility
Hardware	Intel 80386 PC		Intel I486 PCs	
Number of copies	1		25	
Applications	Experimenting		Resource management	

did limited work in this area.

Consultant: "I was impressed with the ability to convert dBase files to Access. It is limited, though. You also can't use the existing Visual Basic module. I'd like to see Access and Visual Basic become one."

Insurance company: "The conversion of a Paradox DOS application to a Paradox for Windows application has proved very difficult. It's basically a rewrite."

Bank: "It's a total rethink of what you're doing. I wouldn't recommend converting anything. There's no benefit to the file structure unless you're using the very novice level of Paradox. Once you get into ObjectPAL, it requires that you trigger events, not just change table values."

Integration with Windows

Users rated Windows integration highly for both products.

Bank: "Borland is trying to leapfrog Microsoft as the source for Windows knowledge by putting in new things in Paradox for Windows like the right click mouse. (If you click on an object with the right mouse button, a property inspector or object menu comes up with a list of options for the object.) It's a more powerful and complicated implementation of the Windows functionality, which means it's slightly harder to use than Microsoft's product."

Database editing capability

These features were rich and varied in both products, though Access was more tuned for end users than programmers, according to the users.

Entertainment firm: "Paradox has a pretty nice extension to Table View. There's everything there that I could possibly want."

Consultant: "Editing for end users in Access is great, and it eliminates some programming. From a developer's standpoint, the editing tools are not totally there."

Query capability

Even though query-by-example originated with Paradox, users said both products implemented this feature very well.

Entertainment firm: "Paradox's query engine is about the best. The Windows version cuts out a lot of the temporary files you used to have to do."

Consultant: "Access is not as intuitive as I'd like, but it's very good."

Reports and forms

The highest accolades were given to the packages' presentation abilities.

Insurance company: "The Windows version of Paradox is 100 times better than the DOS version."

Entertainment firm: "This is the selling point of Paradox for Windows."

Bank: "Converting the form into the report is an outstanding feature of Paradox. Reports were the DOS version's weakness."

Consultant: "Access is a great presentation package. You can do a lot of versions, and you can't go wrong."

Programming language

Both packages took hits in this area: Access because it is not sophisticated enough and Paradox because it represents a paradigm shift from procedural to event-driven programming.

Entertainment firm: "With Paradox, there's a steep learning curve, but once you get over that you can do a lot of interesting things with strategically placed code."

Bank: "Although it looks easy in the book, I found it difficult. For us to be effective, we'll definitely need consulting and training help on our first few applications because it is a different product. It's a cold bath of rethinking programming. I don't think everyone's going to make the cut. I have to struggle to get back to the intermediate level even though I felt I was pretty expert with PAL beforehand. Borland has its hands full getting training out there."•

Written and compiled by Michael L. Sullivan-Trainor.

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- Primerica Corp.
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- Public Service Electric & Gas Co.
- Ryder System, Inc.
- SCM Office Supplies Group
- Sprint Corp.
- Tribune Broadcasting
- Unum Life Insurance Co.
- Witco Industries
- Worldcorp

Microsoft responds

Here are Microsoft's responses to the issues raised in this evaluation. Borland was not able to offer a response in time for publication. The responses are from David Risher, product manager for Access.

•**Performance:** It's no secret that Windows databases are substantial pieces of software. Access requires 386s and at least 4M bytes of random-access memory. We were very careful to give users the option of how much disk to use — Access' minimum installation takes fewer than 5M bytes of disk space. Access is also optimized so that it can start in low memory situations.

A key goal for the next release is to increase performance particularly on low-end 386s. Technology like Rushmore, which we acquired when we merged with Fox Software, Inc., makes a lot of sense in Access architecture. You can expect to see it show up as we move forward.

•**Technical support:** Since introducing Access, we have tripled the number of support engineers dedicated to the product. We are now at the point where we no longer "busy out" with customers, and wait times are coming in line with those of other Microsoft applications. We will continue to add engineers as well as continue our very active CompuServe forum.

•**Programming language:** Access Basic is an extremely sophisticated language, with support for such constructs as transactions, huge arrays, error handling, the ability to call Dynamic Link Libraries and very fast compilation. At the same time, it is a language that is making its way into many Microsoft applications. Microsoft's commitment to Basic means that our different flavors of the language will consolidate into a unified engine in which coding in one application will be reusable in another and one application will be able to drive another.

•**Integration with Windows:** Access already has taken a lead with its use of Windows — from its drag-and-drop query and form interface to tools such as Wizard and Cue Cards. Access also uses Windows Open Services and Open Database Connectivity to allow it to work with other data. Future versions will take this even further. You can expect to see the latest versions of Object Linking and Embedding in future versions of Access, as well as state-of-the-art aspects of the Windows interface seen in Excel and Word.

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INFORMATION

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The fact is, from the factory floor to the executive suite and from raw materials to finished goods, real-life applications are being implemented today. The companies involved are gaining tremendous competitive advantages.

Begin by looking around your organization for potential applications. And start planning for the integration of these technologies into your enterprise-wide information systems.

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SOURCES OF PEN, MOBILE & WIRELESS SOLUTIONS:

C = See this company at Spring Comdex—Atlanta, May 24-28, 1993

Dynamic Bytes develops applications for working with CAD/CAE files, digital photographs, GPS information and graphics in mobile and pen environments. 1-415-854-9335

Ink Development markets productivity software designed for mobile computing. InkWare™NoteTaker and other applications are available for PenPoint and PenWindows. 1-415-573-6565

Nestor, Inc.

"NestorWriter™ is an adaptive handwriting recognition system for pen computers. PenShell™ brings pen input to DOS." 1-401-331-9640

notable

Notable is a leading developer of innovative communications and productivity applications for the new generation of mobile computing / communicating devices. 1-415-312-0800

PFI PenFact, Inc.

Manufacturing applications for pen computers. Proven products and services that improve quality, simplify production reporting, and eliminate paperwork. 1-508-872-6900

PenMetrics, the technology leader of mobile GIS solutions for Windows, markets FieldNotes™, software for field data collection. 1-800-537-3322

PenStuff

Software for field data collection and processing of database imaging, communications and GPS information. Complete services, from pilot projects to full scale production systems. 1-716-461-3182 C

PenUltimate

The Innovator in Mobile, Total Solution Software. Horizontal and Vertical Applications including SalesForce™ with SSPM™: redefining productivity and how it's managed 1-714-476-6360

PenWare

PenWare develops compact, portable applications for mobile pen computing. PenWare's first application is the award-winning PenCell spreadsheet. 1-415-858-4920

SHARPENED

Sharpened Software is a major manufacturer of high-quality business productivity software for pen-based computers. For product information, call 1-206-283-0628.

SunSelect

SunSelect's PenTOPS and PenControl allow Penpoint-based tablet users to access file and printer resources from desktop PCs and networks. 1-800-677-6265

Thinque Systems provides high quality pen-based Sales Automation, Field Service Automation and Route Accounting Software. Available for Windows For Pen and PenRight! 1-818-752-1350

High-level software tools utilize common APIs to develop protocol transparent connectivity to Wide-Area Public Communications Services. 1-800-DEC-INFO ext. WIRE

POWER PEN PAL

Integrated, full-function environment. No C programming required. Build, test, maintain powerful pen applications fast. Run on any 8086/486 PenDOS or PenRight! platform. 1-415-903-3850

SuperScript

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Pen-based & Mobile Computers

Transform your notebook computer into a pen computer. WriteAway!, a user-installable, transparent tablet and pen kit for $595. 1-508-658-3742. C

DAUPHIN

Dauphin Technology's products include the D5000 convertible Pentop, the D5000 Color and the 2.2 lbs., DOS/Windows compatible, 486SLC-based DTR-1. 1-800-782-7922 C

FUJITSU

Fujitsu Personal Systems is a leader in mobile & pen-based computing. FPSI provides systems optimized for size, weight, battery life and overall portability. 1-800-831-3183

GRiD

The leader in pen computing, GRiD designs and markets tablet, hand-held and the award winning Convertible pen-enabled notebook computers worldwide. 1-800-222-4743 C

HEWLETT PACKARD

The leader in palmtop PCs. With HP's 95LX, stay in touch with e-mail, wirelessly. Receive appointment, spreadsheet and schedule updates automatically. 1-800-443-1254

IBM

The IBM P.C. Co. offers high quality 486 based pen solutions,featuring superior pen to screen feel, PCMCIA and support for multiple pen operating systems. 1-800-772-2227 C

Using proprietary pressure-sensitive pad technology, Infonte provides clipboard computers for field applications, and handwriting capture peripherals for personal computers. 1-800-366-4635 C

SLATE

MicroSlate's extensive product line supports all available pen operating systems and includes the DataSlate 400, the first 486 pen computer 1-514-444-3680

NCR

An AT&T Company

NCR is a leading supplier for mobile networked computing solutions for the enterprise. Contact NCR Direct at 1-800-637-2600 for more information.

NEC

The NEC UltraLite®, Autograph™ and Versa™ are high performance, feature rich pen systems designed to provide tools for a variety of business applications. 1-800-NEC-INFO

Nimble Computers

Manufacturer of pen-based computers/communicators weighing approximately one pound and 6"X8"X3/4" in size. Available in 186/386/486 versions. 1-310-592-6200

TelePad

TelePad offers custom software, wireless communications and pen computers to provide a Total Customer Solution for each client 1-703-834-9000

OIC

Incorporating OIC's Handwriter Recognition System software, OIC's PenDOS pen operating environment lets users develop new applications and run existing mouse-aware DOS applications without modification. 1-415-802-7888

Microsoft

Microsoft Windows for Pen Computing extends the windows environment to pen computing. 1-206-882-8080

PENRIGHT!

PenRight! is a pen-based graphical user interface and handwriting recognition engine for MS-DOS computers. PenRight! is installed on more than 80% of the pen computers in the field today 1-800-222-4743 C

Wireless Networks & Communications

PenNet products enable mobile pen computer users to communicate with mainframes, minicomputers, workstations and PC's over telephone and cellular networks. 1-203-531-8162

Digital offers Network Adapters to interface to the Wireless LAN and Access Points to communicate with the wired network. 1-800-DEC-INFO ext. PEN C

DIGITAL OCEAN

Digital Ocean manufactures Grouper, a totally portable, wire-free spread-spectrum LocalTalk connector for PowerBooks and other Apple Macintosh computers. 1-800-345-FISH

IBM

Aggressive programs for wireless communications devices, supporting networks and integration services to allow seamless connectivity to enterprise and public information.

PHOTONICS

Photonics' COLLABORATE™, diffuse infrared wireless networking for indoor mobile computing, facilitates groupware applications, portable-to-desktop connectivity and wired network access 1-408-955-7930 ext. 600 C

Scriptel

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proxim

Proxim is the leader in wireless networking of portable computers and terminals, with the industry's first PCMCIA wireless LAN adapter. 1-415-960-1630

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GENERAL PROGRAMMING INC.

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Look, ma, NO WIRES!

By J. Gerry Purdy

Imagine you're sitting in a chair watching your child's soccer team warm up. There's a few minutes before the game, so you open your small handheld portable computer. You notice that you've received a fax from a customer in Japan. You take a pen and mark up the fax, indicating changes and comments, and then command your personal communications assistant to send the fax back to the customer in Japan, where it is displayed on his fax machine.

All at the same price of making a phone call.

Wouldn't that be great? Unfortunately, receiving and responding to wireless fax messages is currently a pipe dream, as are many other applications using wireless networking. But I believe that by 1994, wireless data communications should start to take off as the wireless infrastructure strengthens, costs start to decline and technical advances bear fruit.

1994 is a watershed year for wireless networks. User costs will start to decline, the infrastructure will solidify and technology advances will make their mark.

Infrastructure care

Remote users today can send messages, faxes and full-motion video over the phone system through software that assists in remote connection via land lines.

The infrastructure that would make wireless communications as easy is not fully in place yet. However, the key wireless network companies say they will solidify the infrastructure, changing analog networks to digital, building new or updating old transmitters and releasing communications software by 1994 and beyond.

Many of the radio stations in place today handle cellular broadcasts, which is fine for information that transmits in a continuous format, such as voice. But because data communications travels in short bursts, there is typically a wait between each transmission. With cellular, companies end up paying for a lot of dead air.

The idea is to convert cellular networks from analog to digital and to refine compression techniques, pumping up the ability to carry. Cellular Digital Packet Data (CDPD), a joint venture between McCaw Cellular Communications, Inc. and the seven regional Bell holding companies, is expected to enable "channel hopping," the ability for data transmissions to occur on existing analog voice networks during idle times between voice calls.

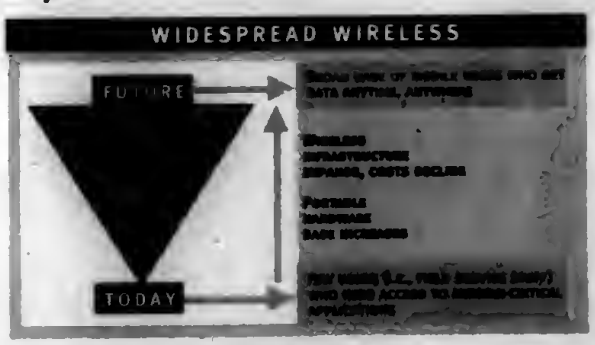
CDPD is also expected to be designed for security. The network will encrypt all packets sent over it with a user identification that makes it hard to scan and decode the message. The network, however, will reportedly not begin operation until the end of this year, with broad rollout in 1994.

Two wide-area wireless networks available today opt for packet-switching technology to carry data transmission. One is the 19.2K bit/sec., 800-MHz Ardis system, a joint venture between Motorola, Inc. and IBM designed originally to support field service and support personnel. The other is Mobitex, a 19.2K bit/sec., 900-MHz system, which is a joint venture between RAM Mobile Data and BellSouth Corp.

Designed for data from the outset, the packet networks send standard amounts of data packaged with an address. Each node checks out the packet's address and, if appropriate, broadcasts to the next node. At the end of the packet's travels, the receiver assembles the packet. In this way, messages from all over can share the same frequencies.

But while Ardis and Mobitex are set up to handle data, they

Wireless nets, *page 141*



Purdy is vice president and chief analyst for the mobile computing service at Dataquest, Inc. in San Jose, Calif.

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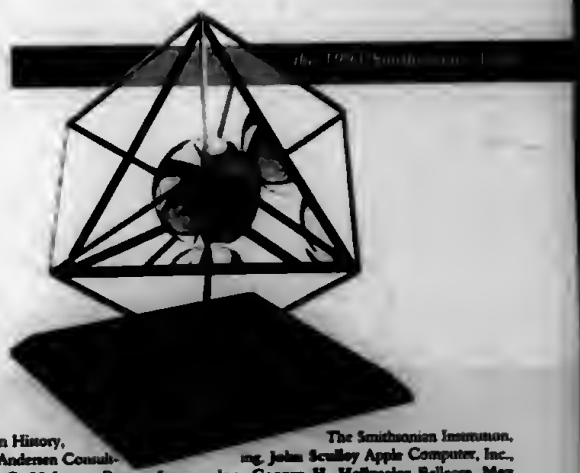
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Computer Industry

Computer Careers

In Depth

The CW Guide to Network Storage Management

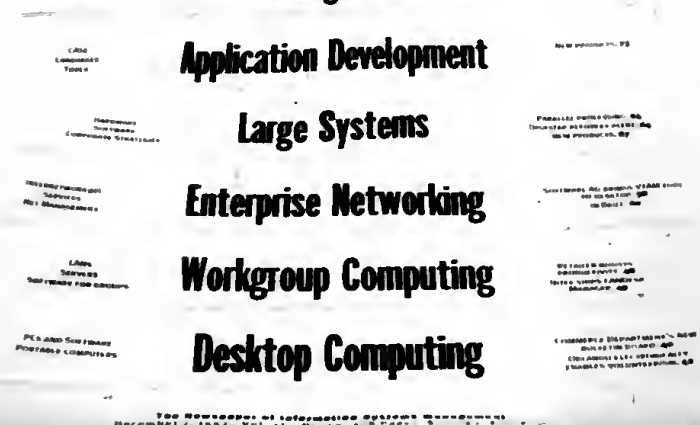
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Wireless nets

CONTINUED FROM PAGE 137

don't have the "coverage" cellular offerings do. Their sponsor organizations, however, say they are working at beefing up their radio bases substantially by the end of the year.

RAM Mobile says it is rolling out five to 10 base stations a week, for a total of 800 expected by July. It is updating software to handle wireless data transmission. Ardis has 1,300 base stations, with 700 more planned for the next several years.

Pardon me, modem

Also helping wireless hit its stride will be small, low-power and affordable radio modems, making their appearance by 1994. Today, modems are comparable in size to a pager or cellular phone; by next year they will fit in card slots for Ardis, Mobitex and CDPD communications.

As these units become smaller, they will become more attractive to users. More users will buy them, and the volume jump will likely push prices down. I predict costs will plunge from the current price of $795 to about $300 by 1994.

It's no good if radio modems are widely available, software is available and wireless networks are available but the cost of using wireless data services is higher than the cost of using land line data communications. Sometimes wireless costs can be two to three times higher than those for phone transmission.

What's the cents?

A subscription to MCI Mail, for example, costs $35 a year, with messages of up to 500 characters priced at 45 cents. In contrast, RAM Mobile charges $69 a month per individual, plus a monthly packet charge of approximately $25 to $100, depending on use.

Users pay a minimum of $32 a month for Ardis, with one character packet of 240 characters (about 30 words) priced at 16½ cents.

But wireless prices should fall and be competitive with land line by next year.

For instance, McCaw says that when its CDPD network comes on-line later this year, prices will be about 10 cents for a short electronic-mail message and 50 cents for a one-page fax.

What's going to bring prices down? First and foremost is simple economics. Wireless data network vendors will start to recover capital costs and will pass on lower prices to users.

Second, advances in technology, such as miniaturization, will start to have an impact. Finally, as wireless becomes more mature, competitive forces will work to reduce costs. •

THE BOOM YEAR

IN WIRELESS HISTORY, 1994 IS GOING TO BE A DOOZY

- **1992**
  - 10X wireless E-mail; 50X faxes
- **1993**
  - Low-power, smaller radio modems for $300
- **1994**
  - Cellular infrastructure grows — lots more base stations
- **1995**
  - Heavy work on compression techniques
- **1996**
  - Existing networks go from analog to digital

ON THE SOFTWARE HORIZON

GENERAL MAGIC, INC. IS WORKING TO DEVELOP SOFTWARE FOR PERSONAL COMMUNICATIONS NETWORKS. FOR ITS TECHNOLOGIES TO BE PERVASIVE, GENERAL MAGIC RELIES ON AN ENORMOUS INFRASTRUCTURE OF WIRELESS NETWORKS AND DEVICES.

WHAT DOES GENERAL MAGIC OFFER?

A product set consisting of two technologies: Telescript and Magic Cap.

TELESCRIPT – A language (hence the "script" part of the name) that provides intelligence to messages sent from one user's system to another.

MAGIC CAP – An operating environment designed to be the interface between Telescript and the end user.

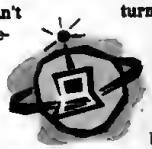
WHAT SHOULD IT LET YOU DO?

When you get a message today (for instance, "Do you want to go to the movies tonight to see Jurassic Park?"), your reply might consist of Yes, No or Maybe. You have to create an additional message for further action.

However, if your message were intelligent, not only would you send the question about the movie, but you could also develop a script of options, such as, "If the answer is 'Yes,' then order theater tickets and have them available for me when I arrive." Agents within the message take action rather than waiting for a user to reply.

Hey! My modem's dead!

You're in a rush and jump on a plane to Europe with your handheld computer and its trusty radio modem card. The first thing you discover when you land is, voila — your trusty old radio modem doesn't work. Just like you can't plug in your hairdryer, using wireless communications is verboten because radio transmitter/receiver frequency is different in Europe than it is in the U.S.

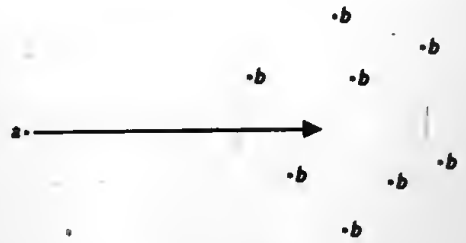


This represents an interesting challenge. Users need an easy and convenient method to run their wireless equipment overseas. Here are some of my ideas:

- **The swap option.** Airlines might let a user traveling to Europe trade in his current radio modem for one that works locally. He would trade the unit back when he gets on a return plane to the U.S.
- **The toggle option.** Radio modem makers could develop what would likely be a higher priced products version letting users switch between one frequencies.
- **The global village option.** After the turn of the century, I think we'll see systems developed that use the same frequency all over the world. Such personal communications networks will require a higher broadcast band (in the gigahertz vs. megahertz range).

Because they'll use a higher broadcast band, these systems will require a much larger network of antennae to transmit signals, which only go short distances at low power.

The positive side of transmitting at high frequency is that users will be able to send and receive more information anywhere, including Europe. •



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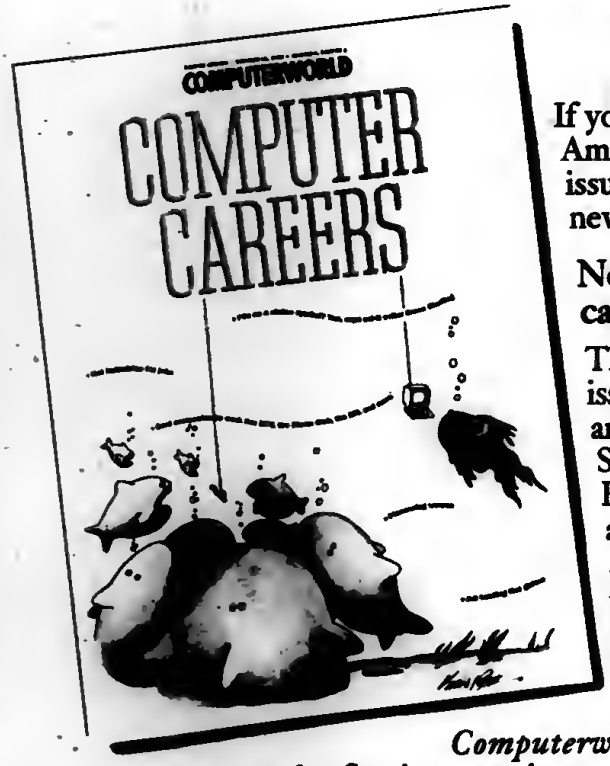
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- And much more!

PROGRAMMERS move to client/server

By David A. Kelly

FOR SOMEONE USED to programming large systems in languages such as Cobol, Fortran, PL/t and assembler, moving to client/server development can be daunting. But training professionals and programmers who have made the change say it can be done.

"If you're a mainframer, don't give up," says Kevin Fleischood, systems engineer at Sabre Technology Gronp, a unit of AMR Corp. "I was able to convert t5 years of mainframe experience into client/server skills."

"You need to have an open mind and be prepared to discard your old notions," says Linda Whitson, vice president at Training Systems & Solutions, a division of AMR Information Services, Inc. For example, "mainframe programmers need to reconceptualize the building of applications. Programming in object-oriented languages requires a significant shift from programming in Cobol."

Despite the leap, the transition can be made. But learning the significant differences between mainframe and client/server programming is important.

■ Conceptual shifts

One of the biggest changes for people moving from programming in languages such as Cobol or assembler to C++ and other object-oriented languages is adapting to the idea of reusability. Instead of writing code that is specific to an application, developers must create code objects that can be easily reused.

Another change for developers is the contrast between character-oriented mainframe applications and event-oriented Microsoft Corp.Windows applications. For example, under CICS Cobol, screen events are handled at one place, while in Windows, each field and button on the screen can trigger an event. "We found that this is a tough concept for people coming over from the mainframe side," says Michael Ryan, systems manager at Merrill Lynch & Co. in New York.

Another problem is the speed of change in the client/server world. "Cobol programming on mainframes hasn't changed very much," Ryan says, "but if you're developing for client/server, you need to learn new metaphors and programming approaches as they come along."

■ Less programming

The move toward standardization and the enormous variety of client/server software available gives programmers the option of integrating existing programs or packages into their applications rather than reinventing the wheel. This is a big change for developers emerging from the mainframe environment where "you rarely used more than one package," says Don Weimann, visual programming specialist at Chevron Information Technology Co. in San Ramon, Calif. "Now you are able to integrate spreadsheets into applications nsing DDE or OLE, so you don't have to write everything that you need."

■ Increased responsibility

The client/server environment isn't as controlled or comfortable as a mainframe environment. "The infrastructure is less concrete," Weimann says. "For example, on mainframes there is source-code management and procedures for moving codé into active use. When you are doing that in client/server, the server is amidst the group, and you pick up all these additional tasks, such as backup, recovery, memory management and maintaining network connections." Fleischood says. "Mainframers may take [their source-code management] for granted, but we found that getting the right one was crucial to the success of our project."

■ Teams

Developers find that client/server project teams tond to be different, too. Instead of just interacting with other computer people, client/server specialists do everything from working directly with end nsers to meeting with high-level company management.

"Project teams need to have a great deal of end-user operational knowledge to improve the efficiency of the client's operations," says John Keating, senior analyst at G2 Research, Inc.

■ Increased development speed

Application development under client/server is faster and more interactive than mainframe development. Developers can use tools such as Powersoft Corp.'s PowerBuilder and Blyth Software, Inc.'s Omnis to get user feedback, create screens and continne building the application without losing time.

In traditional development, the client often would not see a system until it was almost complete, resulting in less productive code and more extensive changes to completed code.

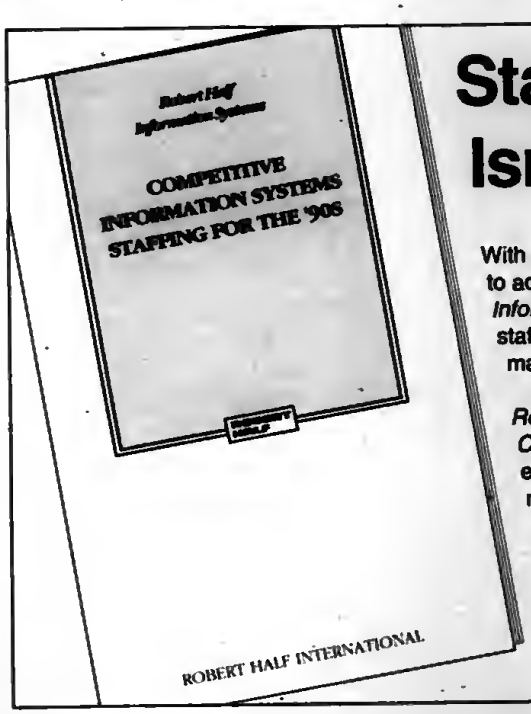
"It becomes one of the more difficult transitions to make," Ryan says. "You do more prototyping approaches in client/server instead of just building applications to specification."

■ Best advice? Go GUI

So what's the best way to start making the move to client/server? Learn and understand a graphical user interface environment, Ryan suggests.

You can make the transition if you try. "You need to be flexible — stretch yourself to look beyond the envelope that you're need to in a mainframe environment," Whitson says.

Kelly is a client/server and systems integration consultant in West Newton, Mass.



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Career advice for the '90s

Don't wait to motivate staff



Raymond S. Perry, vice president and chief information officer at Avon Products, Inc. in Rye, N.Y., joins us this week as Fast Track's guest adviser. Fast Track is a twice-monthly column dedicated to answering your career questions.

Q. I am the information systems director at a relatively small shop. Due to the stagnant economy, turnover has been nonexistent for almost two years. With no positions opening up, it is difficult to keep my staff challenged, and I'm not in a position to offer promotions or raises. How can I keep them motivated?

A. Whether an information systems shop is large or small, the advice is the same, and there's plenty that you can do:

•Try to provide an educational development program by working with a local university. Encourage your staff to take specialized courses and to work on advanced degrees to expand their skills in both general business and technology areas.

•Assign research projects on new technologies. For instance, have someone find out about client/server applications or investigate telecommunications benefits by talking with key vendors. Afterward, have him present his findings to the staff. This not only challenges the individual but the department as well.

•Cross-train IS staff by moving them to different assignments or having them work with different people. The person responsible for the data center, for instance, could investigate the job of the person in charge of the development staff.

•Bring in executives from other parts of the business to describe what their IS needs are. Any executive can translate his business problem into an information need in less than 10 minutes.

These are just a few things that we do in our organization to keep people interested, excited and stretching. IS people are technical people and love a challenge.



Jerrold Burns

Raymond S. Perry, *vice president and CIO, Avon Products*

Q. I was "rightsized" out of a senior programming job at a bank. Six months later, I was hired by an insurance carrier as a project manager. There is a shortage of resources here, and we're under a lot of pressure to deliver more with less. Morale is low. Short of leaving, how can I make the best of a bad situation?

A. Find a way to demonstrate your need for more resources. Or demonstrate that the requests being made of you are unreasonable. You can prove your point by getting benchmarks from outside vendors and public accounting firms. These groups can assess how they would solve the same problems you're working on.

In many cases, your company will find that most of these outside services cost more, take longer and are more difficult to work with. Your group will begin to look awfully good. And if it doesn't, you should figure out a way to change this because it probably means that you aren't competitive.

You might also look at ways to deliver more with less. Client/server technology, stronger user involvement, PC solutions and a lot of other less formal approaches than what the mainframe requires are faster and simpler.

Finally, I wouldn't rule out working on your resume at the same time. There are a lot of situations where you just can't win.

Q. I am a local-area network manager at a large manufacturing company. I have ideas on how to improve the way things are done; however, politics are holding me back. What's the best way to point out ineffective procedures without jeopardizing my position?

A. The phrase "politics are holding me back" implies that people are not listening to you or are feeling threatened by your suggestions for improvement. One piece of advice is to present your suggestions in a more positive way by describing how they could benefit the people you are trying to win over.

Another tactic is instead of telling people what needs to be done differently, ask for an opportunity to show them. Once they see the difference, they will adopt the change.

It's also worth asking other people how they view you. Do they see you as a person trying to help them or someone that threatens and embarrasses them? Depending on the answer, you might want to change your approach. A nonthreatening manner, a sense of humor and good interpersonal skills are worth a million in these situations.

Q. I am a software developer at a financial organization. It's frustrating to work with users who constantly change their minds about what they want. How can I deal with them, without insulting their intelligence?

A. Change is crucial; therefore, you must recognize it as part of the process and learn to manage it. Remember that speedy product delivery is key. The quicker you deliver products to users, the less time they have to make changes.

Also, ask users to agree to a date after which they can't make any changes to a particular release. If they come to you after that date, they'll know the changes will go into the next release. This keeps them from being too frustrated and allows you to focus on what you're trying to deliver.

Changa is a natural and important part of the process. If I found a system where the user didn't want to make changes, I'd worry because it says to me that the project isn't really critical to his business.

[redacted]

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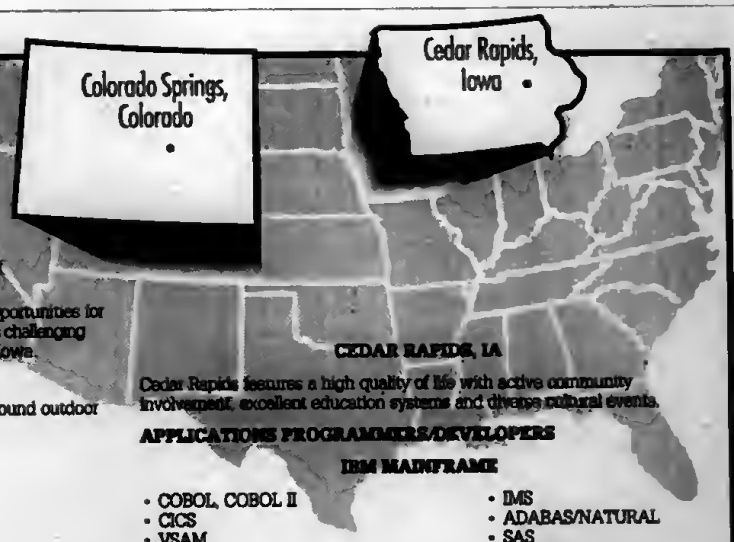
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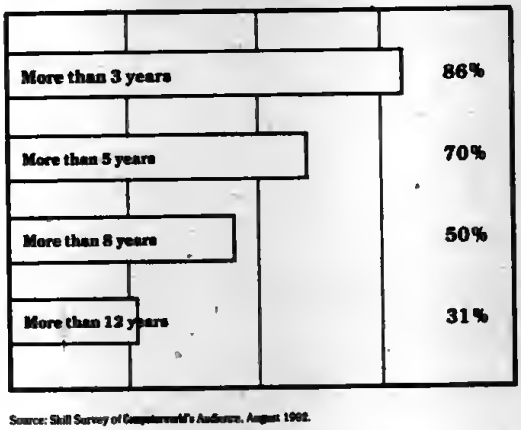
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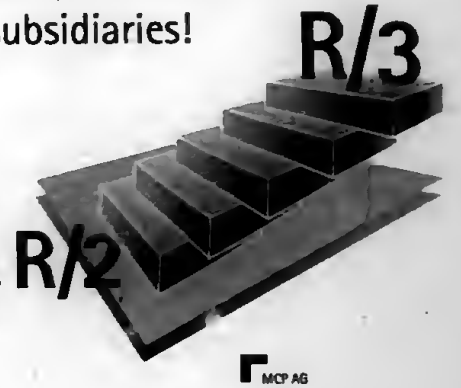
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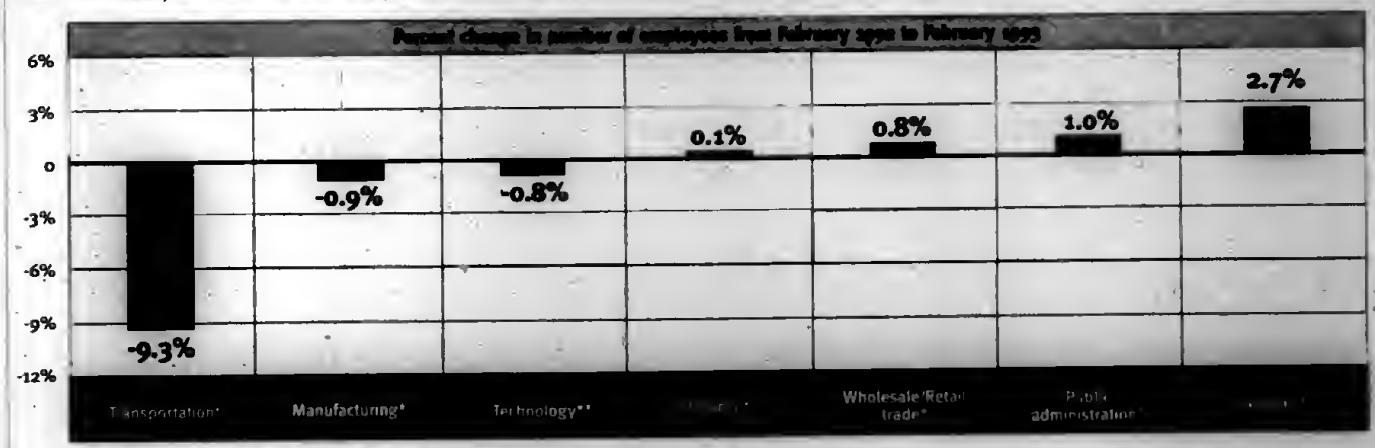
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Computerworld/CorpTech Career Index

The service industry hired more workers than any other segment, while the transportation industry made huge cutbacks



*Source: U.S. Department of Labor, Bureau of Labor Statistics

**Source: © Copyright 1993, Corporate Technology Information Services, Inc., Woburn, Mass.

Prices hard to come by; but persistence pays off

shopper alert

By Stefanie McCann

IF YOU WANT a price quote for a specific PC or notebook from a reseller, superstore or vendor and only have time for a couple of quick phone calls, you can probably forget it. It's not as easy as it seems.

My mission was to get a random sampling of prices for a few systems, but 51 phone calls later, I still had a pretty sketchy list.

I was looking for machines introduced in the last year, including Apple Computer, Inc.'s PowerBook 180, Toshiba America Information Systems, Inc.'s T4500 and IBM's ThinkPad (see chart).

Out of the four superstores I called, only a few carried these particular systems. Instead, many stocked lesser known machines from manufacturers such as Leading Edge Products, Inc. The superstores were the most willing to give out prices, however, and were always available to take my calls.

Of the stores I contacted, I fared best with Computer City in Fort Worth, Texas. With one call and minimal time on hold, I received prices for three systems.

The same was true for Micro Center in Columbus, Ohio, and Ballard Computer, which is in Seattle.

At the reseller level, obtaining a price was generally more time consuming, but resellers carried more of the systems in my search. I called Inacom five times before I got a call back — a week later.

I called two MicroAge stores (about seven times), but the reseller never followed through. On the other hand, Computerware in Bristol, Pa., responded after only one call.

On the vendor front, getting prices meant leaving a few messages and playing phone tag, but otherwise, they were quite amenable.

Price trends

It's actually easier to get a sense of pricing trends than it is to get individual prices. I486-based PC prices have dropped 22%, and I486-based notebook prices have dropped an average of 20% in the last six months, says John Murphy, president of reseller Metro Computing in Gibbsboro, N.J.

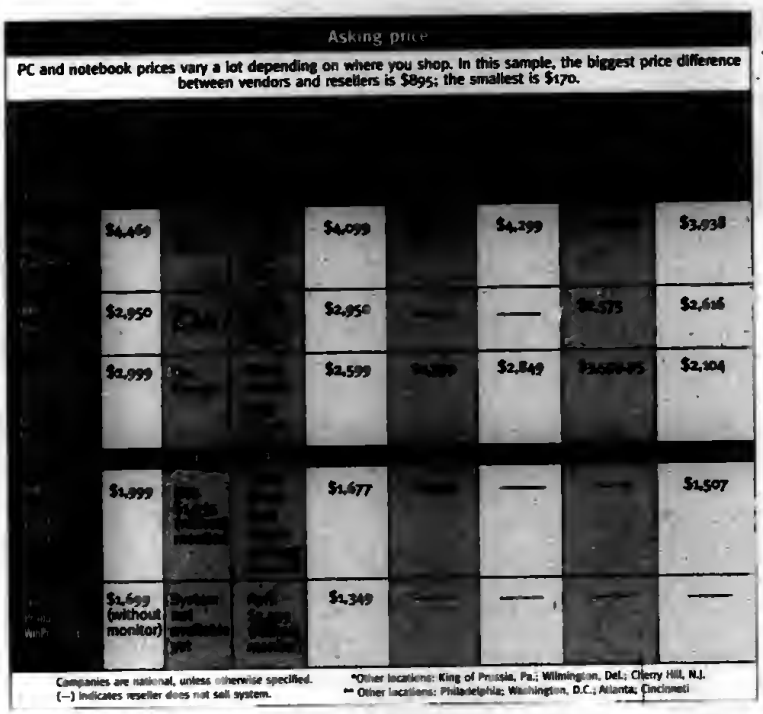
What's good for buyers right now is that competition is spurring vendors and resellers to add more disk space, more memory or faster chips for relatively little cost.

According to Metro Computing, of the systems listed, the price for Toshiba America's T4500 has dropped the most in six months — about 10%. Apple's PowerBook 180 costs approximately 4% less now, and IBM's ThinkPad is about 3% cheaper.

McCann is an assistant researcher, features.

Asking price

PC and notebook prices vary a lot depending on where you shop. In this sample, the biggest price difference between vendors and resellers is $895; the smallest is $170.



Companies are national, unless otherwise specified. (—) Indicates reseller does not sell system. *Other locations: King of Prussia, Pa.; Wilmington, Del.; Cherry Hill, N.J. ** Other locations: Philadelphia; Washington, D.C.; Atlanta; Cincinnati

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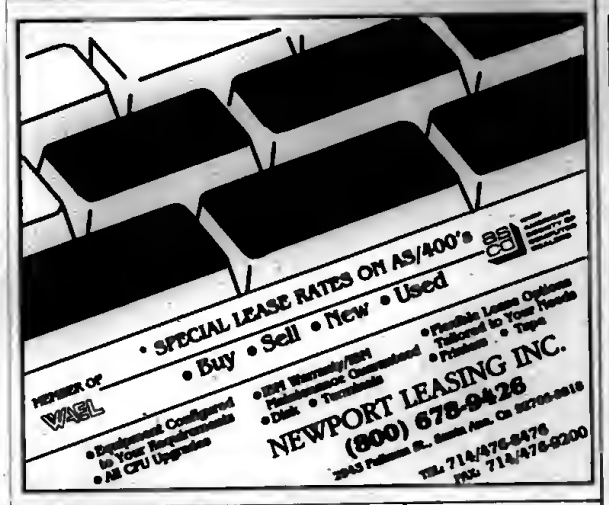
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REQUEST FOR PROPOSALS
CMM-868

SYNOPSIS: The New York City Transit Authority is seeking a Consultant to Evaluate and Assess MSA and Other Commercially Available Software Packages Against the Authority's Employee Related Information Needs.
CLOSING DATE: June 21, 1993 - 1:30 P.M.
CONTRACT NO. CMM-868

This RFP may be obtained free of charge by calling the Procurement Specialist David Petersen at (718) 694-4080 or copies of the solicitation can be obtained without charge by mail or in person at 130 Livingston Street, Brooklyn, New York 11201, 1st floor Bid Reception desk between the hours of 9 AM - 3:30 PM.

The factors that the Authority will consider in evaluating proposals are listed below in their relative order of importance: Knowledge of overall requirements; Experience in relevant areas; Experience and qualifications of assigned personnel; Cost analysis of Price (labor, overhead, profit and out-of-pocket expenses); Responsiveness and completeness of the proposal with regard to the work and all matters called for in the RFP; Project planning including subcontractors; In-depth knowledge of commercially available Human Resource/employee-related data software packages; Broad knowledge and experience in the conducting of feasibility studies, evaluation/assessment of software packages, use of proprietary assessment tools, processing of data analysis and modeling, determining information and business system architecture, engineering of systems applications, preparation and delivery of executive level presentations and the development of final reports.
A pre-proposal conference will be held on Thursday, June 3, 1993 at 9:30 AM in Conference Room 5A, 6th floor, 130 Livingston Street, Brooklyn, NY.

Proposers who wish to attend should notify the Procurement Specialist David Petersen at 718-694-4080 not later than 4 PM on June 1, 1993. All inquiries, in writing, must be received by the Authority by June 4, 1993. The Authority intends to select a proposer or proposers with which to enter into negotiations by July 5, 1993. The anticipated contract award date is October 1993.

Proposers will be fully responsible for the delivery of their bids in a timely manner. Reliance upon the U.S. Mail or other carriers is at the proposer's risk. Late submissions will not be considered.

Disadvantaged Business Enterprises will be given full opportunity to submit proposals and will not be subjected to discrimination on the basis of race, religion, color, sex or national origin in consideration of award.
A full description of these and all other provisions are included in the proposal documents.

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PS/2 Model 55SX	$750	$675
ThinkPad 300	$1,400	$1,350
PS/2 Model 90-Q11	$1,700	$1,700
PS/2 Model 95-Q11	$3,000	$2,825
Compaq Prolinea 4/50	$1,100	$1,500
Prolinea 4/33	$1,050	$1,250
Portable 386	$650	$675
SLT-386	$925	$825
LTE-286	$650	$650
DeskPro 486/33i	$1,850	$1,725
Apple Macintosh SE	$625	$600
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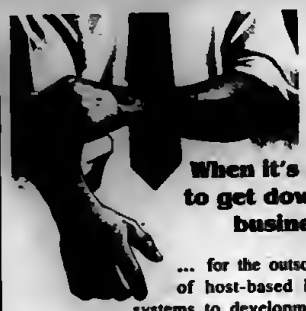
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Gainers / Losers

Percent

Gainers		Losers	
Astel Communication Corp.	46.9	Bachman Info. Systems	-18.5
KnowledgeWare Inc.	36.7	Comshare Inc.	-15.5
IMRS	30.8	Digital Systems Int'l Inc.	-14.3
Group 1 Software (L)	30.0	Dataram Corp.	-13.5
ViewLogic Systems	25.7	MathSoft	-11.6
Software Toolworks Inc. (H)	19.9	CE Software	-9.7
Creative Technologies Inc.	18.1	Sequoia Systems Inc.	-9.3
Scientific Atlanta Inc.	17.3	Telebit Corp. (L)	-8.3

Dollar

Gainers		Losers	
Sybase Inc. (H)	7.88	Matsushita Electronics	-2.63
Microsoft Corp.	7.38	BMC Software Inc.	-2.00
Hewlett-Packard Co. (H)	6.75	Tektronix Inc.	-2.00
Intel Corp.	6.00	Xerox Corp.	-1.88
Compaq Computer Corp.	5.88	Software Spectrum Inc.	-1.50
Creative Technologies Inc.	5.25	Dataram Corp.	-1.50
AT&T	5.00	Symantec Corp.	-1.50
DSC Communications	5.00	Policy Management Sys.	-1.50

[redacted]

Firm writes in wide margins

In the era of contracting margins, data processing service provider **BISYS Group, Inc. (BSYS)** is going against the grain.

BISYS' operating margin grew 1.5% compared with last year, according to Salomon Brothers, Inc. analyst James Kissane.

Kissane said the Little Falls, N.J.-based company managed that trick because it offers only a single software product, Totalplus, on which BISYS can spend all of its development resources. BISYS handles data processing chores exclusively for banks, thrifts and other financial institutions. Economies of scale derived from a single-product focus should allow BISYS to continue expanding its operating margins during the next several fiscal years, Kissane said.

He issued a Buy rating for BISYS stock in his May 12 report. BISYS closed Wednesday at 17¾. It has reported losses for the past two fiscal years, due to onetime charges and goodwill write-offs related to the company's spin-off from **Automatic Data Processing, Inc.** (AUD). Apart from those charges, the company has tallied operational profits.

However, BISYS' concentration on a single methodology is a hindrance as well as a blessing, according to F. Mark D'Annolfo, senior vice president at investment research firm Adams, Harkness & Hill, Inc.

BISYS and larger competitor **Fiserv, Inc. (FISV)** derive about half of their revenue growth through acquisitions of smaller players in their highly fragmented industry. "The disadvantage of the one product is that it makes the acquisition criteria a little tighter for BISYS," D'Annolfo said. "Fiserv is less efficient, but they will operate multiple packages, so acquisitions are easier."

D'Annolfo said he expects Fiserv to record approximately $450 million in revenue this fiscal year, compared with $90 million in revenue for BISYS. "Fiserv has a little more of a national presence. BISYS right now is about where Fiserv was a half-dozen years ago," D'Annolfo said. Fiserv's profit margins are in the low teens, while BYSIS margins could climb as high as 18% by 1994.

D'Annolfo, like Kissane, rated BISYS issues a Buy. Fiserv issues, which closed Wednesday at 18½, are "attractive on weakness," meaning they are a good buy any time the share price drops, D'Annolfo said.

In addition to competing for the same customers, Fiserv and BISYS seem to be inextricably tied together. Curiously, Fiserv owns a 7% stake in its rival. Both companies have also received financing from investment firm Welsh, Carson, Anderson and Stowe.

—Derek Slater

Exch	52 Week Range		Company	May 21 3 pm	Wk Net Change	Wk Pct Change
Communications and Network Services						
OTC	37.63	4.63	3COM Corp	37.50	1.88	5.1
NYS	80.25	61.38	American Info Techs Corp	72.75	0.25	0.2
NYS	60.38	40.63	AT&T	59.75	5.00	9.1
OTC	3.56	0.75	Astel Communication Corp	7.94	0.94	46.9
OTC	24.50	10.25	Banyan Systems Inc.	15.23	0.75	5.2
NYS	58.75	42.38	Bell Atlantic Corp	54.13	1.63	3.1
NYS	57.50	46.75	BellSouth Corp	52.13	0.63	1.2
NYS	6.25	3.63	Bolt, Beranek & Newman	4.63	0.00	0.0
OTC	18.50	9.50	Brooktrout Technology	11.38	1.13	11.0
NYS	101.63	42.13	Cabletron Systems (H)	99.63	2.63	2.7
OTC	19.50	3.75	Centigram Communications	17.00	-0.75	-4.7
OTC	40.00	17.75	Chipcom Corp (H)	39.50	2.75	8.0
OTC	54.00	20.00	Cisco Systems Inc. (H)	54.00	4.13	8.3
OTC	18.75	5.50	Compression Labs Inc	9.88	-0.50	4.8
OTC	34.00	11.00	CrossComm	33.25	3.25	10.8
OTC	4.63	0.88	Data Switch Corp	3.25	-0.25	7.1
NYS	72.12	12.38	Digital Comm. Assoc	13.00	0.38	-2.8
OTC	17.75	4.50	Digital Systems Int'l Inc.	4.50	-0.75	14.3
OTC	41.25	6.00	DSC Communications	41.25	5.00	13.8
OTC	9.50	4.75	Fibronix Int'l Inc.	6.63	-0.13	-1.9
OTC	16.00	8.75	FileNet Corp	11.50	1.13	10.8
OTC	8.38	1.50	Gandalf Technologies Inc	3.13	-0.13	2.8
OTC	2.06	0.69	Gateway Communications	1.13	-0.03	-2.7
NYS	14.50	2.88	General DataComm Inds. (H)	14.50	1.75	13.2
ASE	4.00	2.00	Go Video	2.31	-0.19	7.5
NYS	37.75	30.63	GTE Corp	35.38	0.12	0.4
NYS	84.25	62.50	ITT Corp	81.38	0.25	0.2
OTC	51.13	29.88	MCI Communications Corp (H)	51.13	2.75	5.7
OTC	11.50	7.25	Microcom Inc	5.00	0.25	3.3
OTC	74.25	4.75	Netrix Corp	5.25	-0.25	-4.3
OTC	19.00	8.75	Network Computing Devices	11.25	0.00	0.0
NYS	15.00	5.38	Network Equipment Tech	7.12	-0.62	-8.1
OTC	23.25	8.00	Network General	9.38	-0.38	3.8
OTC	15.75	9.50	Network Systems Corp.	9.63	0.75	8.5
OTC	70.25	14.38	Newbridge Networks Corp (H)	68.38	3.75	5.8
NYS	46.00	30.50	Northern Telecom Ltd.	36.38	2.12	6.2
OTC	35.25	22.50	Novell Inc.	31.25	1.50	5.0
NYS	92.50	73.00	Nynex Corp	91.50	-1.38	-1.2
OTC	30.00	14.50	Octel Communications Corp.	21.50	0.75	3.6
OTC	8.13	3.38	Penril Data Comm Networks	4.38	0.25	6.1
OTC	38.75	10.25	PictureTel Corp.	21.88	-0.38	-1.7
OTC	15.25	4.63	Proteon Inc. (L)	3.63	0.75	15.8
NYS	32.75	11.90	Scientific Atlanta Inc.	32.25	4.75	17.2
NYS	81.50	59.38	Southwestern Bell Corp	75.25	-0.38	-0.5
NYS	33.25	21.00	Sprint Corp	25.38	1.38	4.6
OTC	27.00	10.50	Standard Microsystems Corp	14.75	1.12	2.2
OTC	18.50	8.88	Stratacom Inc.	12.75	1.38	12.1
OTC	120.50	25.75	SynOptics Communications	120.12	4.50	3.9
OTC	7.88	2.88	Telebit Corp (L)	4.13	-0.38	-8.2
OTC	9.38	2.13	Telematics Int'l Inc.	6.13	0.00	0.0
OTC	25.50	13.38	US Robotics	24.75	2.50	11.2
NYS	45.00	34.38	US West Inc.	43.12	1.88	4.5
OTC	53.00	12.00	Wellfleet Communications (H)	52.25	3.25	6.6
OTC	14.50	7.00	Xircom	12.25	1.75	16.7
PCs and Workstations						
OTC	6.75	2.50	Advanced Logic Research	3.50	0.75	7.7
OTC	65.25	41.50	Apple Computer Inc.	37.50	2.13	3.8
OTC	24.75	11.25	AST Research Inc.	15.50	1.00	6.9
NYS	17.50	3.50	Commodore Int'l	4.13	-0.75	-5.7
NYS	58.50	22.11	Compaq Computer Corp	52.23	5.88	11.6
OTC	49.88	15.00	Dell Computer Corp	32.75	1.50	4.8
NYS	85.50	50.25	Hewlett Packard Co (H)	84.50	6.75	8.0
NYS	25.75	16.13	Silicon Graphics	35.75	1.63	4.8
OTC	41.00	27.50	Sun Microsystems Inc.	29.88	0.00	15.5
NYS	32.12	22.25	Tandy Corp	29.50	-0.13	0.4
OTC	11.00	2.75	Zeos International Ltd.	4.00	0.00	0.0
Large Systems						
ASE	18.38	4.63	Amdahl Corp.	5.25	0.00	0.0
NYS	9.75	4.25	Convex Computer	6.38	0.50	8.5
OTC	6.12	1.88	Cray Computer	2.88	0.00	0.0
NYS	32.88	19.00	Cray Research Inc.	29.00	-0.38	-1.3
NYS	13.68	7.13	Data General Corp	10.50	0.75	2.2
NYS	49.25	30.38	Digital Equipment Corp.	46.38	-0.25	-0.5
NYS	38.62	26.63	Harris Corp	35.50	0.00	0.0
NYS	100.38	43.88	IBM	88.73	0.88	1.8
OTC	22.00	5.50	Kendall Square Research	14.75	-0.25	-1.2
NYS	127.50	81.00	Matsushita Electronics	117.50	-2.63	-2.2
OTC	21.75	8.25	NetFrame	17.25	0.25	1.5
OTC	15.50	9.25	Parallan Computer (H)	14.50	1.00	6.5
OTC	18.00	6.00	Pyramid Technology (H)	17.88	1.12	6.7
OTC	24.00	11.25	Sequent Computer Sys	22.38	2.38	11.9
OTC	14.50	1.38	Sequoia Systems Inc.	2.13	-0.22	-9.3
NYS	48.38	29.50	Stratus Computer Inc.	36.00	1.75	5.1
NYS	16.88	9.88	Tandem Computers Inc.	17.88	0.38	3.0
OTC	19.00	10.63	TriCord Systems	16.75	0.00	0.0
NYS	13.88	7.75	Unisys Corp	11.50	-0.50	-4.2
Software						
OTC	65.75	25.25	Adobe Systems Inc (H)	65.75	4.63	7.6
OTC	25.00	10.25	Aldus Corp.	15.63	1.12	7.8
OTC	14.25	5.50	American Software Inc	7.00	0.25	3.7
OTC	28.12	9.75	Ask Computer Systems	12.00	-0.75	-5.9
OTC	16.50	32.75	Autodesk Inc.	51.75	3.00	6.2
OTC	13.00	7.50	Bachman Info. Systems	2.75	-0.63	-18.5
OTC	41.00	33.75	BGS Systems Inc	33.75	1.25	-3.6
OTC	84.13	37.75	BMC Software Inc	53.50	-2.00	-3.8
OTC	28.25	17.00	Boole & Babbage	21.25	0.00	0.0
OTC	36.50	17.50	Borland Int'l Inc.	25.88	-0.13	-0.5
OTC	6.38	3.00	CE Software	3.50	-0.38	-9.7
ASE	29.13	6.25	Cheyenne Software Inc. (H)	28.88	1.88	6.9
OTC	19.50	9.25	ChipSoft	11.75	1.50	15.4
OTC	9.75	5.63	Cognos Inc.	6.50	0.23	4.0
NYS	29.38	30.88	Computer Associates (H)	29.38	3.00	11.4
NYS	12.38	2.75	Computervision Corp	4.75	0.25	5.6
OTC	36.25	19.25	Compuware Corp.	27.00	0.00	0.0
OTC	14.75	5.75	Comshare Inc.	6.12	-1.13	-15.5
OTC	17.25	10.75	Corel Corp	15.00	0.25	1.7
OTC	28.00	5.75	Easel Corp	5.75	-0.38	-6.1
OTC	25.25	12.00	4th Dimension	19.75	-0.50	-2.5
OTC	19.50	6.00	Frame Technology	2.38	-0.38	-4.8
OTC	20.75	10.00	Group 1 Software (L)	12.00	3.00	30.0
OTC	35.25	18.00	Gupta	38.00	-0.50	-2.7
OTC	8.73	3.50	Hogan Systems Inc.	7.75	0.13	1.6
OTC	25.75	11.25	IMRS	18.00	4.73	35.8
OTC	34.75	18.50	Information Resources	34.00	1.50	4.6
OTC	48.25	12.13	Informix Corp (H)	45.50	3.25	7.7
OTC	17.00	6.50	Intergraph Corp	9.88	0.13	-1.2
OTC	13.63	6.88	Interleaf Inc.	8.88	0.25	2.9
OTC	18.00	6.75	Intersolv Inc.	7.75	-0.38	-4.6
OTC	18.00	7.75	KnowledgeWare Inc	11.88	3.38	39.7
OTC	54.75	26.00	Legent Corp	28.25	0.00	0.0
OTC	34.25	14.75	Lotus Development	34.25	3.75	12.2
OTC	22.00	7.75	MathSoft	9.50	-1.25	-11.6
OTC	23.25	5.25	McAfee Associates	7.00	0.75	3.7
OTC	11.62	1.88	Meca Software	11.00	-0.13	-1.1
OTC	15.00	5.25	Mentor Graphics	10.38	0.75	2.8
OTC	64.00	27.25	Micro Focus	35.38	1.63	4.8
OTC	19.00	4.38	Micrografx Inc.	5.73	0.00	0.0
OTC	95.00	65.50	Microsoft Corp.	92.50	7.38	8.7
OTC	41.88	14.00	Oracle Corp. (H)	41.88	2.38	8.8
OTC	32.75	15.38	Parametric Technology	37.75	3.63	12.4
OTC	40.50	22.50	PeopleSoft	31.25	0.75	2.5
OTC	9.00	3.50	Phoenix Technologies	4.63	-0.38	7.5
OTC	40.00	25.38	Powersoft	28.50	0.25	0.9
OTC	41.50	17.00	Platinum Software	26.00	2.75	11.8
OTC	25.00	11.25	Platinum Technology	14.75	-1.00	-6.3
OTC	61.50	29.00	Progress Software Corp	38.25	-0.75	1.9
OTC	15.50	2.94	Quarterdeck Office Sys.	3.06	-0.13	-3.9
OTC	24.50	11.75	Rainbow Technologies Inc	24.00	1.75	7.9
OTC	19.75	4.00	RasterOps	7.13	0.00	0.9
OTC	15.25	3.62	Ross Systems	11.50	-0.73	-6.1
OTC	27.23	8.50	Sapiens Intl. Corp. N.V.	23.00	1.75	5.7
OTC	15.00	6.75	Software Publishing Corp.	7.63	-0.75	3.2
OTC	10.75	7.00	Software Toolworks Inc. (H)	10.75	1.75	19.8
OTC	4.50	0.75	Spinnaker Software	1.44	-0.12	-8.0
OTC	12.75	3.25	State of the Art	10.00	0.75	8.1
NYS	24.63	13.75	Sterling Software Inc.	19.13	-0.13	-0.6
OTC	19.00	8.00	Struct. Dynamics Research	19.00	1.50	8.6
OTC	71.12	21.00	Sybase Inc (H)	71.12	7.88	12.5
OTC	44.25	5.88	Symantec Corp	16.50	-1.50	-8.3
NYS	12.50	5.23	Systems Center Inc.	50.00	0.00	0.0
OTC	25.50	10.00	System Software Assoc.	16.23	1.75	12.1
OTC	7.00	2.50	Tomzic Corp.	3.38	-0.13	-3.6
OTC	22.75	0.13	ViewLogic Systems	10.75	3.25	21.7
OTC	22.50	6.75	Walker Interactive Systems	7.50	0.00	0.9
OTC	3.19	1.38	Wordstar	1.94	-0.06	-3.1
Semiconductors						
NYS	32.88	7.38	Advanced Micro Devices	29.63	0.12	0.4
NYS	21.38	9.00	Analog Devices Inc	19.00	1.12	6.3
OTC	23.62	7.63	Atmel Corp	23.63	1.00	4.4
OTC	9.38	2.73	Chips and Technologies	3.50	0.11	3.7
OTC	39.75	13.00	Cirrus Logic	17.00	0.50	3.0
NYS	12.38	7.38	Cypress Semiconductor Corp (H)	12.75	0.12	1.0
NYS	16.13	8.00	Dallas Semiconductor	14.50	-0.13	-0.9
OTC	121.25	40.50	Intel Corp.	104.00	6.00	6.1
NYS	14.13	8.88	LSI Logic Corp	12.50	0.75	6.4
OTC	23.25	13.75	Lattice Semiconductor	30.00	3.75	14.3
NYS	28.50	33.12	Micron Technology	28.25	4.00	16.5
NYS	78.75	37.12	Motorola Inc (H)	78.25	3.61	4.9
NYS	15.00	8.50	National Semiconductor	14.38	0.38	2.7
OTC	18.00	6.50	Sierra Semiconductor	8.25	0.25	3.1
OTC	40.00	22.73	Synopsys	40.00	4.25	11.9
NYS	63.00	32.25	Texas Instruments	64.88	3.00	4.8
OTC	8.88	6.00	VLSI Technology	7.50	-0.25	2.2
OTC	9.00	2.13	Weitek (H)	7.63	0.23	9.4
ASE	9.63	4.13	Western Digital Corp.	3.00	-0.12	-2.4
OTC	37.50	14.50	Xilinx	36.75	2.50	7.3
OTC	27.84	12.00	Zilog Inc.	27.00	0.75	2.9
Peripherals and Subsystems						
OTC	37.25	11.75	American Power Conversion (H)	27.25	4.00	12.0
OTC	20.16	13.66	BancTec Inc.	18.00	-0.25	-1.4
OTC	18.00	6.25	Cambex Corp	6.23	-0.25	-3.8
ASE	10.38	6.50	Cognitronics Corp.	7.12	0.00	0.0
NYS	25.50	12.00	Conner Peripherals	12.50	1.00	8.0
OTC	38.50	10.75	Creative Technologies Inc	34.75	5.25	18.1
OTC	30.75	14.25	Data Race Inc.	74.63	2.02	11.9
ASE	17.00	4.75	Dataram Corp.	9.63	-1.50	-13.5
NYS	34.25	8.50	EMC Corp	36.25	1.00	3.0
OTC	10.50	5.38	Emulex Corp	7.25	0.00	0.0
OTC	19.00	33.25	Evans & Sutherland	17.25	0.38	2.7
OTC	23.63	17.00	Exabyte	12.73	-1.00	-7.2
OTC	26.00	7.09	Intelligent Info. Systems	20.75	-1.00	-6.6
OTC	8.88	3.88	Iomega Corp	5.00	0.00	0.0
OTC	21.50	5.75	IPL Systems Inc.	8.25	0.25	3.1
OTC	24.00	30.75	Komag Inc.	21.25	0.75	3.7
OTC	19.63	5.88	Maxtor Corp.	7.75	0.75	10.7
OTC	11.25	5.75	Micropolis Corp.	7.50	-0.25	-3.2
NYS	116.00	93.00	3M Corp	116.88	1.00	0.9
OTC	7.75	4.00	Printronix Inc.	6.75	0.25	3.8
NYS	17.25	6.88	QMS Inc.	13.75	1.00	8.0
OTC	17.88	33.62	Quantum Corp	13.50	-0.38	-2.7
OTC	12.75	3.38	Radius Inc.	3.75	-0.13	-3.2
NYS	36.25	7.50	Recognition Equipment	13.00	1.50	12.1
OTC	13.88	4.50	Rexon Inc	4.50	-0.23	-5.3
OTC	22.38	12.00	Seagate Technology	17.00	1.13	7.1
NYS	40.25	19.00	Storage Technology (H)	40.25	1.13	2.9
NYS	27.88	16.88	Tektronix Inc.	24.25	-2.00	-7.8
NYS	88.88	64.73	Xerox Corp	73.75	-1.88	-2.5
Services						
OTC	73.75	14.25	American Mgmt. Systems	18.88	-0.63	3.2
NYS	6.75	2.88	Anacomp Inc.	3.00	0.00	0.0
OTC	35.75	16.25	Analysts Int'l	27.25	1.50	5.8
NYS	56.12	18.75	Auto Data Processing	49.62	0.63	1.3
NYS	17.25	9.94	Ceridian Corp	14.88	0.13	0.8
NYS	17.38	13.13	Comdisco Inc.	14.25	-0.13	-0.9
OTC	9.25	4.50	Computer Horizons	7.25	0.00	0.0
NYS	80.50	57.00	Computer Sciences	74.00	2.12	2.0
NYS	9.25	6.50	Computer Task Group (L)	6.88	0.25	3.9
NYS	40.50	23.00	CompUSA Inc.	32.50	1.63	1.3
OTC	14.75	8.00	Corporate Software	12.75	0.73	2.1
OTC	73.75	2.38	Egghead Discount Software	9.00	-0.75	-2.7
NYS	35.88	25.23	General Motors E (EDS)	30.50	0.50	1.7
OTC	25.50	9.25	Inacom Corp	17.88	-0.63	-3.4
OTC	35.38	8.25	Intelligent Electronics	14.00	0.75	5.7
OTC	13.00	6.63	Merisel	17.38	0.38	3.1
OTC	14.75	5.75	Microage Inc	14.00	1.25	0.6
OTC	43.00	21.75	Paychex	39.25	3.00	8.3
NYS	87.25	37.00	Policy Management Sys.	37.75	1.50	3.8
NYS	38.00	16.81	Reynolds and Reynolds	36.50	0.88	7.3
OTC	32.75	22.00	SEI Corp.	25.75	0.25	0.8
OTC	26.38	16.88	Shared Medical Systems	21.13	0.38	1.8
OTC	13.88	3.75	SHL Systemhouse	11.38	0.13	1.1
OTC	29.25	18.25	Software Spectrum Inc	25.75	-1.50	-5.8
OTC	32.75	22.50	Sungard Data Systems	29.38	0.13	0.4
NYS	6.38	1.33	Ultimate Corp. (H)	4.12	0.38	10.0

Key: (H) = New annual high reached in period (L) = New annual low reached in period

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In Brief

HP looks strong

Exceeding analysts' expectations, Hewlett-Packard Co. reported fiscal second-quarter net earnings of $347 million, a 7% increase over the same period last year. Revenue in the period ended April 30 rose 22% to $5 billion. HP cited strong growth in all geographic areas and product lines, particularly in its LaserJet printers, multiuser Unix systems, X Window System terminals and software development tools.

Compuware gains

Compuware Corp. posted fiscal fourth-quarter net earnings of $9.5 million, compared with a loss of $23.2 million in the same period last year. Revenue grew 22% to $69.1 million. For the year, the Farmington Hills, Mich., firm earned $50 million on revenue of $235 million, compared with last year's loss of $28.8 million on revenue of $175 million.

JWP to sell PC unit

JWP, Inc. last week agreed to sell its Businessland, Inc. subsidiary to a group of investors. JWP acquired the struggling reseller and network integrator a couple of years ago to boost its Information Services unit. The investor group has agreed to assume all of Information Services' debts, which total $125 million, and other liabilities. JWP will also receive warrants to purchase up to 10% of the investment group's common stock.

SHORT TAKES Sapiens International Corp. N.V. in Cary, N.C., reported fiscal first-quarter earnings of $402,000 on revenue of $8.7 million.... Graphnet, Inc. in Teaneck, N.J., has filed suit against MCI International, Inc. alleging that the MCI Communications Corp. subsidiary is trying to force it out of the valued-added telex and fax transmission business.

Dell revamps portable strategy

Apple's PowerBook chieftain tapped to fix product development woes

By Patricia Keefe
AUSTIN, TEXAS

Dell Computer Corp. likes to compare its average three-day shipping schedule with delays of a month or more across state at rival Compaq Computer Corp. But when it comes to intel Corp. 1486-based laptops, Dell cannot ship a one. Surprisingly, it does not yet make them and will not ship any until year's end.

And then there are the laptops that Dell no doubt wishes it had not shipped: the 320N notebook, which stumbled following what Dell officials said were "perceived" quality problems; and more recently, the 325SLI subnotebook, which Dell recalled to correct miswired motherboard connections.



John Medica *will have his hands full with Dell's laptop unit*

The result has been an admitted drop in Dell's laptop revenue from 12% to 10% of the company's overall revenue. No one is more aware of these problems than John Medica, Dell's new vice president of portable products. A little more than a month ago, Medica left Apple Computer, Inc., where he was lead developer on the successful PowerBook line, to take up the gauntlet at Dell.

Notebook problems

In a recent interview, Medica addressed the fact that Dell is lagging badly in the notebook market. He delicately noted that "Dell has tremendous upside potential" in this area. More specifically, he said Dell has no 486 notebooks or active-matrix screens. "That's a problem," he acknowledged.

"We will learn what we can from a suboptimal scenario and apply it to next time," he said.

Medica is probably the right person for the job. The situation at Apple prior to the launch of the PowerBook is somewhat analogous to where Dell is today, according to Matthew Cain, an analyst at Meta Group, Inc. in Westport, Conn.

Apple, too, was once a real laggard in the portable market, with some "dreadful" machines that were not really selling, Cain said. Since the "blockbuster" PowerBook took off, Apple has not looked back, he added.

"Anyone who shepherded that effort must have learned something — lessons that would be applicable on the Intel side of the market as well," Cain added.

Analysts said Dell fell behind in the laptop market because its desktop business was doing so well. They agreed the laptop market is critical to Dell's future success.

Medica's primary goal for the next two to three years is to achieve a comparable share in notebooks to whatever Dell holds on the desktop (see chart).

He has divided his challenges into near- and long-term business plans (see story below right).

The first step is to correct the technical "oversights of the past." These include nonbacklit screens with the 325SLI and non-active-matrix screens across the line. He said he also intends to boost overall processing performance while shrinking overall bulk.

Also on the drawing board is delivery of 486-based machines by year's end, Medica said.

Waiting can be deadly

As for whether Dell can afford to wait that long, Medica noted there are several critical matrices on which portables are judged — size, weight, processor, storage capacity and display quality. "If you are one or two generations behind the market leaders, you're in trouble because then you either have to compete on price or not sell [at all]," he explained. "That's the reason [Dell notebooks] aren't in high demand today."

According to Computer Intelligence/Infocorp analyst Kimball Brown, it is too late for Dell to come out with a 486SL-based laptop. "They don't want to start out with an aborted 486 at this stage; it'll be a dead product by fall," he said. Brown explained that Intel is doing away with the SL series and is pushing the 3.3V S series, which will not be available in volume until year's end.

World class partners

To hit those critical benchmarks, Medica also acknowledged the "need to deliver a competently manufactured ... line of products." To rectify this, Dell said it intends to align itself with "world-class" suppliers of key portable system components.

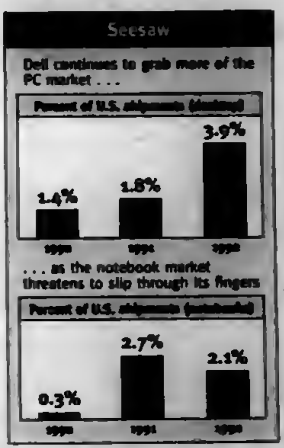
Doing so will provide the company with a window to where the technology is going for the next 24 months, which in turn will help Medica make appropriate product mapping decisions.

In the short term, he said Dell must satisfy 320N customers "as best we can."

Meanwhile, Medica is in the midst of reviewing Dell's laptop deployment strategy. A lot of the 320N is built from OEM parts, which has limited Dell's control over the process. However, Dell has no intention of changing its strategy of purchasing parts from OEMs with "limited value-add from us," he said.

Taking over

John Medica, vice president of portable products at Dell, estimated that one out of every five or six systems sold today is a notebook. Four years from now, he said he expects that will have changed to one system out of every three. Meta Group analyst Matthew Cain agreed, estimating that by 1997 40% of all PCs shipped will be laptops.



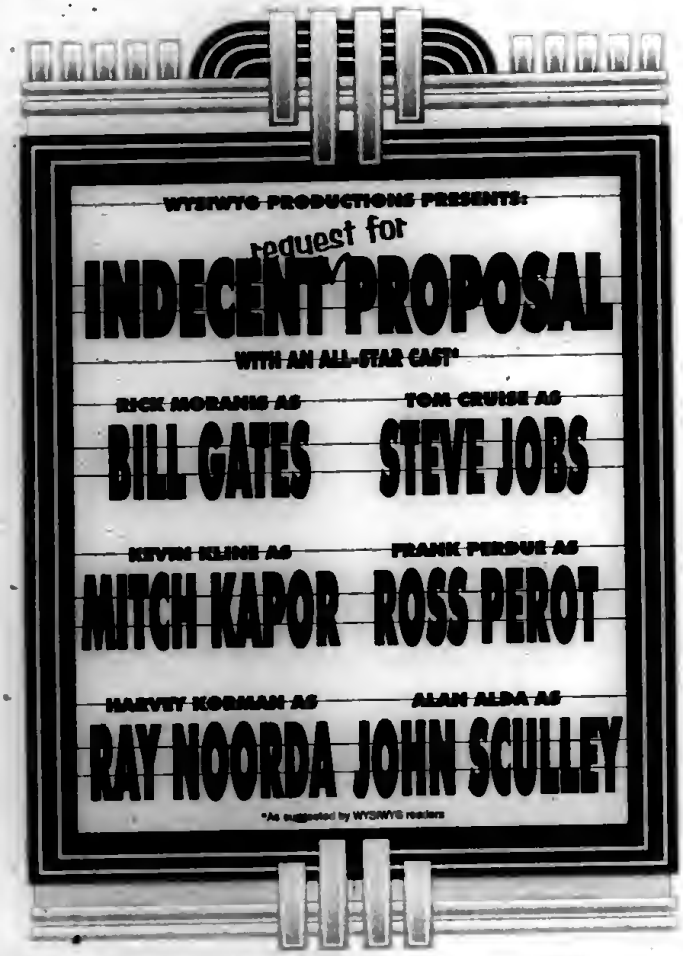
Setting sales for success

After heading the launch of Apple's highly successful PowerBook, John Medica, now vice president of portable products at Dell Computer, will have his hands full righting Dell's listing portables ship.

The following are Medica's top priorities for 1993:

- Broaden product lines.
- Outline critical technologies with world-class suppliers.
- Get within three to four months (at least) of market leaders in supplying the latest advancements in key laptop features.
- Improve product design so systems can be turned out and around more quickly.
- Compete to Dell's strengths: customization, service and support and direct relationships with customers.
- Get into the handheld and pen-based system markets (further down the road). Medica said that because laptop buyers typically are computer-savvy, he expects to be able to divert marketing dollars to research.

—*Patricia Keefe*



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"These kidnappers are clever, Lieutenant. Look at this ransom note, the way they got the text to wrap around the victim's photograph. And the fonts! They must be creating their own—must be over 35 typefaces here..."

Inside Lines

Smudgeless input

Pen computing has failed to attract much interest for a variety of reasons, one of which is the fact that users can't send pen input among devices. That will start to change today at Comdex/Spring '93. Slate Corp. and five other vendors — Apple, Microsoft, Lotus, Go and General Magic — will introduce Jot 1.0. The product is an effort to define electronic "ink" as a new type of data, easily recognizable across applications and systems.

Strange bedfellows

Lotus is holding discussions with Microsoft concerning the Bento object file format that is at the heart of Apple's initiative to build a facility that would provide Microsoft OLE-like capabilities for the Macintosh. "Most of our work with Microsoft on OLE is to make sure it's an open environment. We're trying to get them to support the Bento file format under OLE" for cross-platform development, said Alan Morrow, general manager at Lotus.

Close-knit partners

DEC and Microsoft are researching the development of Windows NT-based clusters and mixed clusters, according to DEC sources. "DEC owns most of the interesting patents on how to make a single environment [cross-clusters]," said Dennis Schneider, DEC's manager of NT marketing, who said the companies are looking at what might be the most [illegible] markets for NT clustering. "NT and Windows systems would be a natural" choice, he said, adding that work is preliminary right now. Issues to be resolved would include virtual memory, security and locking mechanisms to manage applications across the clusters.

Follow the leader

Enrico Pesatori, vice president of DEC's PC business unit, is doing some spring cleaning of the marketing group, bringing in his cronies from Zenith Data Systems and other outside executives, DEC sources said. They said the PC marketing organization will be reorganized, and Matt Mirapaul, vice president of marketing communications at Zenith, is coming into spearhead the changes.

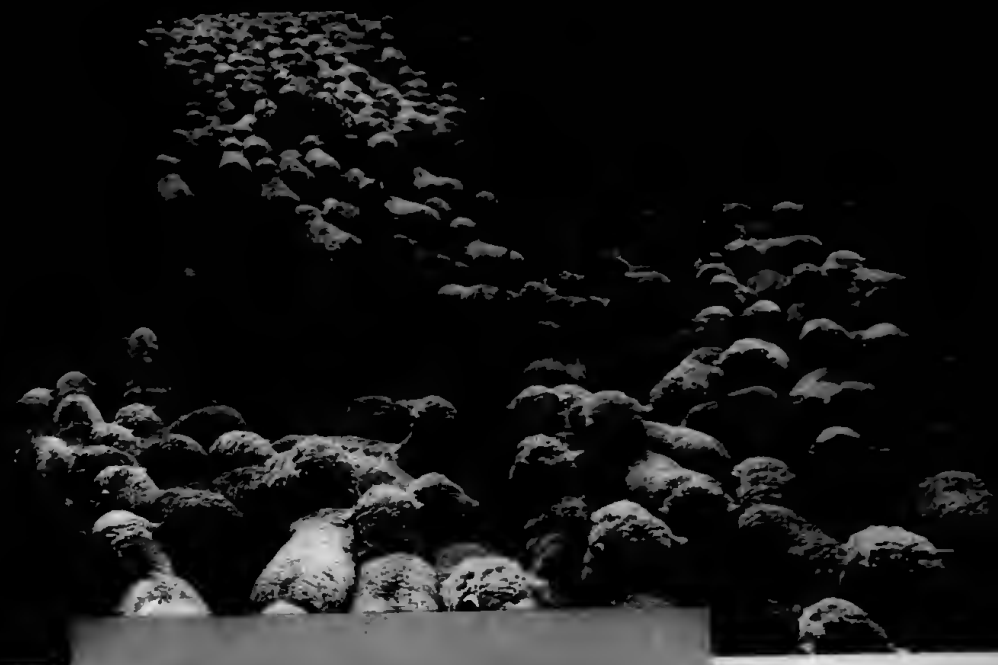
Cooperating with customers

NCR has been quietly unbundling its Cooperation office software suite since the beginning of this year to meet customer demands, according to Krystyna Filistowicz, an analyst at Dataquest, Inc. Users have pressed NCR to break out Cooperation's functional modules to more easily integrate them into their workgroup environments, rather than being forced to purchase the entire suite, she said. Daniel L. Beatty, an assistant vice president of coordination technologies at NCR, confirmed that NCR has started taking steps to unbundle the comprehensive suite.

Switching switches?

MCI is considering swapping out its Siemens Stromberg-Carlson switch-based fast-packet backbone and is already in lab trials with three other vendors' switches, according to a consultant who hung around at an MCI press conference at the ICA/ComNet show last week while Paul J. Weichselbaum, MCI's vice president of data marketing, fielded questions. The consultant surmised that MCI is considering a new backbone because Siemens has not made any announcements about ATM support, and MCI is feeling competitive pressure to offer ATM-based services.

Turns out that Microsoft may have been suffering from a small case of the "cobbler's children have no shoes" syndrome. Microsoft has contracted Ideas Commercial Systems, a Columbia, Md., unit of Ideas, Inc., to build an imaging and document management system for its accounting departments. The Ideas Imprevento software, which will be piloted next month, will be deployed on NT servers. The software replaces the paper-based system that Microsoft currently uses in its accounting department. Phone, fax or CompuServe News Editor Alan Alper with news tips at (508) 343-8474, (508) 875-8931 or 76537,2412, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.



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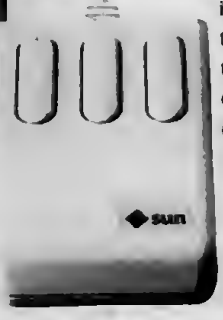
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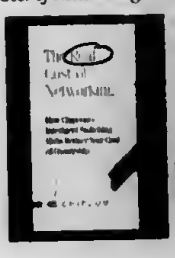
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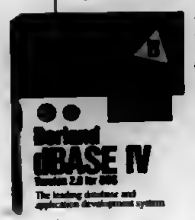
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